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MINISTRY OF IRRIGATION AND POWER

REPORT

OF

THE KRISHNA-GODAVARI COMMISSION

Annexure X

Particulars of Irrigation and Hydro-electric schemes, under construction

KRISHNA RIVER SYSTEM

July 1962

Table of Contents

FOREWORD

The data presented in this Annexure relate to Irrigation and Hydro-electric schemes on the Krishna river system approved for execution in I, II and III plans and are based on the information obtained from the State Governments of Andhra Pradesh, Maharashtra and Mysore supplemented, here and there, by information collected from project reports and official correspondence between the State Governments and the Planning Commission or the Ministry of Irrigation and Power.

On some of the schemes there have been changes and improvements since original approval, generally of a minor character. These changes and improvements have also been described in this Annexure.

Statement showing proposed installed power, annual irrigation and annual diversion

Name of State Category of schemes	*Number of schemes*	*Proposed installed power*	*Proposed C. C. A. or Ayacut*	*Proposed annual irrigation*	*Proposed annual diversion*
1	2	3	4	5	6
		k.W.	.....acres.....		T.M.C.
ANDHRA PRADESH			*Ayacut*		
Major and medium schemes	3*	27,000	2,189,400	2,189,400	292.4
Minor schemes	3	—	6,105	6,105	1.2
Small tanks and diversions	4	—	1,217	1,217	
Total	**10**	**27,000**	**2,196,722**	**2,196,722**	**293.6**
MAHARASHTRA			*C. C. A.*		
Major and medium schemes	7	580,000	110,300	211,500	101.6
Minor schemes	23	—	41,564	34,142	2.6
Small tanks and diversions	32	—	7,936	6,081	
Total	**62**	**580,000**	**159,800**	**251,723**	**104.2**
MYSORE			*Ayacut*		
Major and medium schemes	9*	—	45,100	49,300	5.3
Minor schemes	31	—	29,715	28,493	5.8
Small tanks and diversions	120	—	22,446	22,446	
Total	**160**	—	**97,261**	**100,239**	**11.1**
Total of major and medium schemes	17	607,000	2,344,800	2,450,200	399.3
Total of minor schemes	57	—	77,384	68,740	9.6
Total of small tanks and diversions	156	—	31,599	29,744	
Grand Total	**230**	**607,000**	**2,453,783**	**2,548,684**	**408.9**

**Two schemes are common between Andhra Pradesh and Mysore*

INTRODUCTION

1.1 After a preliminary study of the nature and extent of irrigation developments, existing and proposed, in the Krishna and Godavari basins and after general discussions with the representatives of the State Governments concerned, the Commission decided to classify all schemes and projects into the following four groups :

(i) Major schemes to include all power projects and such other schemes as would each irrigate 50,000 acres or more annually ;

(ii) Medium schemes — each intended to irrigate less than 50,000 acres annually but having an Ayacut or C.C.A. of not less than 5,000 acres ;

(iii) Minor schemes — each having an Ayacut or C.C.A. of less than 5,000 acres but not less than 500 acres ; and

(iv) Small tanks and diversions — each having an Ayacut or C. C. A. of less than 500 acres.

1.2 A form was drawn to show in detail such particulars of schemes and projects as were relevant to the Commission's work and the State Governments were requested to furnish the requisite data for each major and medium schemes approved for execution in I, II and III Plans. This form with explanatory note, is shown in Section 2. It was, however, found that the information sought by the Commission was not readily available with the State Governments ; each State, therefore, set out to collect as much information as could be compiled in the time available.

Particulars of each major and medium projects, as obtained from the State Governments, are given in Section 3. These were shown in draft form first to the representatives of the State Governments concerned, for varification. After appropriate modifications had been made, the revised drafts were discussed in a joint meeting at which the Commission had the benefit of comments made and views expressed by the representatives of other States. This led to some further changes, which have all been incorporated in Section 3.

1.3 The significance of the index numbers, as given to each project in Section 3, is the same as explained in the Commission's Report.

1.4 Important particulars of all major and medium schemes arranged State-wise are given in Table I, including the proposed annual irrigation, proposed annual diversion and also the proposed installed power capacity by each scheme.

1.5 Since each minor scheme diverts but a small quantity of water, since the number of such schemes is relatively large and since most of the particulars specified for the major and medium projects were not available for the minor schemes, the Commission decided to request the State Governments to furnish only a few important facts regarding each minor scheme. These have been presented in Table II to the extent these could be made available by the State Governments.

1.6 As regards small tanks and diversions, even the particulars called for the minor schemes were not available for individual small tanks and diversions. It was, therefore, decided to collect some particulars regarding these small tanks and diversions, not by individual works, but collectively for all the small tanks and diversions in each district. Even this information was not wholly available. The information obtained is shown in Table III.

1.7 An abstract of all information available regarding minor schemes and small tanks and diversions is shown in Table IV. This table gives the total number of schemes of this kind, district-wise, the areas proposed to be irrigated and the proposed annual diversion. The Commission have attempted to fill in the gaps in the data ; the figures assumed are shown in brackets and suitable notes have been added to indicate the basis on which the assumptions have been made.

No records are available of the quantum of river supplies to be diverted by minor schemes or by small tanks and diversions. In order to get some idea of this quantum, the information contained in Table V was collected from each State Government and was utilised in working out the annual diversions shown in Table IV.

1.8 The total number of schemes in each State, the total area proposed to be irrigated and the total river supply proposed to be diverted and also the total installed power are shown in a statement in the beginning of the Annexure.

Section 2

General form for recording particulars of schemes approved for execution in I, II and III Plans with explanatory notes

Name of scheme or system

Index Number
indicating serial number,
category of project, sub-basin
and State or States

1. Name of State

State or States benefited by the scheme ; if the scheme was in a different State prior to re-organisation of States, also the name of that State

2. Scope of the scheme or system

Irrigation, hydro-electric or multi-purpose; if multipurpose, all purposes are stated ; whether based on flow or flow-cum-storage ;

For irrigation schemes, acreage of C. C. A. or Ayacut is given

For hydro-electric schemes, installed power in k.W. is stated

3. Source of supply

Name of channel with name of place where diversion works are located, tributary and the river

Illustration : Sina at Sholapur/Bhima/Krishna

Upstream uses if any, existing and proposed

4. Description of the reservoir or tank

Live storage; dead storage; carry-over; annual reservoir losses; filling period; depletion period; catchment area; area submerged; full reservoir level; minimum pond level or dead storage level.

If no canal takes off from the reservoir or tank :

type, length and height of dam; length and capacity of spillway; and number and capacity of outlets.

5. Description of the headworks

If a canal takes off above the dam :

type, length and height of dam, length and capacity of spillway, number and capacity of outlets including particulars of head regulator of the canal.

If the headworks consist of a weir, anicut or barrage :

length of weir, anicut or barrage with discharging capacity; particulars of under-sluices and of head regulator of canal; minimum pond level, catchment area upstream of headworks.

6. Description of the canal(s)

Name of canal (contour or ridge); whether taking off on right or left; length of main canal (and of branches); one seasonal, two seasonal or perennial; lined or unlined; authorised capacity at head

7. (a) Nature of investigations carried out up-to-date

(b) Actual or probable date of beginning of construction

8. Probable date of beginning of operation

IRRIGATION ASPECTS

9. Gross commanded area, culturable commanded area and Ayacut, district-wise

(i) In general, separate tables are prepared for each major canal;

(ii) Ayacut figures are not given for schemes in Madhya Pradesh and Maharashtra

Item	*Names of districts*		*Total*
			...thousand acres...
G.C.A.			
C.C.A.			
Ayacut			

10. Area proposed to be irrigated annually and intensity of irrigation

Intensity of irrigation is worked out as percentage of area irrigated in each season (*kharif, rabi, abi, tabi,* hot-weather *etc.*) on total C. C. A. in case of Madhya Pradesh and Maharashtra and on total Ayacut in case of Andhra Pradesh, Mysore and Orissa

	Area proposed to be irrigated annually	*Intensity of irrigation*
(i) Perennial		
(ii) Two seasonal		
(iii) *Kharif*		
(iv) *Rabi*		
(v) Hot weather		
(vi) Total		

11. Normal rainfall and river supply proposed to be diverted

(i) If there is more than one canal separate tables are prepared for each major canal;

(ii) figures for column 2 are read from monthly Isohytel maps;

(iii) figures in column 3 and 4 are based on the sum-total of the rainfall figures for the month for all the stations in the commanded area divided by the number of stations;

(iv) figures in column 6 represent

$$\frac{\text{average cusecs proposed to be diverted during the month}}{\text{authorised capacity of the canal}}$$

(v) figures in columns 2 to 4 are correct to first place of decimal and those in columns 5 and 6 to two places of decimal

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....*inches*.....			.....*T.M.C*.....	
June					
July					
—					
—					
April					
May					
Total					

12. (*a*) **Depth of sub-soil water table below ground level in the area proposed to be irrigated**

(*b*) **Nature and extent of fluctuation in the water table**

(*c*) **Has any study been made of the likely effect of the introduction of irrigation on sub-soil water-table ?**

Information is given only where data based on regular observations are available

13. (*a*) **Characteristics of soil (s) in the commanded area**

Results of scientific soil survey if carried out are given, otherwise general classification specifying soil texture with depth of soil crust

(*b*) **Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?**

Information is given only where scientific studies have been made

14. Existing pattern of cultivation in the area proposed to be irrigated

(i) Paddy, wheat, sugar-cane and cotton are specified individually; any other crop which covers more than 5 percent of the total cropped area is also specified, all other crops are grouped under 'others';

(ii) crop percentages are worked out on the 'total cropped area' as given in the last column, and are correct to the first place of decimal.

Perennial		Two seasonal				
Percentage of principal crops	Total area (T. acres)	Percentage of principal crops	Total area (T. acres)	Percentage of principal crops	Total area (T. acres)	Total cropped area (T. acres)

15. (*a*) **Proposed pattern of irrigated cultivation**

(i) Paddy, wheat, sugar-cane and cotton are specified individually ; any other crop which covers more than 5 percent of the total cropped area is also specified, all other crops are grouped under 'others';

(ii) crop percentages are worked out on the 'Grand Total' as given in the last column, and are correct to the first place of decimal

Perennial		Two Seasonal				Grand Total (T. acres)
Percentage of principal crops	Total area (T. acres)	Percentage of principal crops	Total area (T. acres)	Percentage of principal crops	Total area (T. acres)	

(*b*) **Are there any rules for regulating crop pattern ?**

16. Duty and Delta at canal head (as anticipated)

Duty (acres per mean cusec)			Dalta (feet)			
Perennial	Kharif	Rabi	Perennial	Kharif	Rabi	Overall

Overall delta represents

$$\frac{\text{area proposed to be irrigated annually vide item 10}}{\text{total annual river supply proposed to be diverted vide item 11}}$$

17. (*a*) **Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom**

It is specified whether area irrigated by tanks is included in or excluded from the C.C.A. or Ayacut of the scheme

17. (*b*) **Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom**

It is specified whether the area irrigated by wells is included in or excluded from the C.C.A. or Ayacut of the scheme

18. Quantum of river supplies available in relation to withdrawals

Whether river supply data available and whether supplies are adequate to meet irrigation requirement.

POWER ASPECTS

19. River supply proposed to be diverted and operation head

Month	*Range of operation head* (*feet*)	*Supply (average) passing through turbines (cusecs)*
June		
July		
—		
—		
April		
May		
Total		T.M.C.

20. Proposed disposal of tail-race waters

Month	*Particulars*
June	
July	
—	
—	
April	
May	

21. Quantum of river supplies available in relation to withdrawals

Whether river supply data available and whether supplies are adequate to meet power requirements

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Aspect such as navigation, water supply for towns, supplies given for industrial uses are specified

23. Extent and type of area submerged by reservoir

Class of land (agricultural, forest and waste) that would be submerged. If the area lies outside the State, to what extent and in what State.

24. Total cost of the scheme

25. Financial return of the scheme

Percentage of net return on the total capital outlay

26. Cost per acre irrigated

27. Cost per k.W. power produced

28. Main features and purpose of the scheme

29. Special features of the scheme

This item is included only if there are special features not covered by items 1—28 above

Section 3
Particulars
of
Major and Medium Projects

1. Name of State

Andhra Pradesh (formerly partly in Hyderabad and partly in Madras)

2. Scope of the scheme or system

Irrigation project; flow-cum-storage; additional Ayacut 2,000,000 acres; also creates power potential, and provides 2nd crop irrigation in Krishna Delta Canals

3. Source of supply

Krishna at Nandikonda;

Considerable utilisation upstream both existing and proposed

4. Description of the reservoir or tank

Live storage	88.00 T.M.C.
Dead storage	194.60 T.M.C.
Carry-over	Nil
Annual reservoir losses	about 14.0 T.M.C.
Filling period	16th June to 31st October
Depletion period	1st November to 15th June
Catchment area	83,087 square miles
Area submerged	53,120 acres (70,400 acres at M.W.L. 590.0)
Full reservoir level	R.L. 546
Minimum pond level	R.L. 503

5. Description of the headworks

Dam : masonry, 4,756 feet long, 409 feet high with earthen flanks, total length 15,326 feet

Spillway : ogee, 1,550 feet long, with 26 vertical gates of 50 feet × 44 feet each, total capacity 1,430,000 cusecs

Outlets : 26 river sluices, 5.0 feet × 9.0 feet each, total capacity 98,000 cusecs at M.W.L.

Head regulator : left bank, 4 vents of 12 feet × 25 feet each
right bank, 9 vents of 10 feet × 15 feet each ;
Two penstocks, 25 feet diameter each and 8 of 16 feet diameter each

6. Description of canals

(i) Nagarjunasagar Right Canal (contour); 127 miles long (branches 131.5 miles); one seasonal; unlined; capacity **11,000 cusecs**, masonry works are being constructed for **21,000 cusecs**

(ii) Nagarjunasagar Left Canal (contour); 111 miles long (branches 120 miles); one seasonal; lined for first 85 miles; capacity **11,000 cusecs**, masonry works are being constructed for discharge of **15,000 cusecs**

(iii) New Krishna West Canal (contour); right bank of Krishna river upstream Krishna Barrage; 42 miles long; one seasonal; unlined; capacity **2,200 cusecs**

7. (a) Nature of investigation carried out up-to-date

Project sanctioned in 1961, a revised project has since been submitted in February, 1962. The particulars given here under are stated to be in accordance with the revised project

(b) Actual or probable date of beginning of construction February, 1956

8. Probable date of beginning of operation

June 1965 ; it will be possible to give some water stored in the reservoir to Krishna Delta for 2nd crop irrigation by January 1963

9. Gross commanded area, culturable commanded area and Ayacut, district-wise

District	*Nagarjunasagar Right Canal*				*Nagarjunasagar Left Canal*				*New Krishna West Canal*	
	Guntur	*Kurnool*	*Nellore*	*Total*	*Nalgonda*	*Khammam*	*Krishna*	*Total*	*Guntur*	*Total*
	.. ..				*thousand acres*	.. ..				
G.C.A.	1,984.0	41.3	222.7	2,248.0	574.3	587.2	505.2	1,667.0	Included in Nagarjuna-sagar Right Canal	3,915.0
C.C.A.	1,775.0	39.7	181.9	1,996.6	516.8	513.8	399.1	1,429.7		3,426.3
Ayacut	850.0	20.0	100.0	970.0	380.0	210.0	290.0	880.0	150.0	2,000.0

10. Area proposed to be irrigated annually and intensity of irrigation

	Nagarjunasagar Right Canal		*Nagarjunasagar Left Canal*		*New Krishna West Canal*	
	Area proposed to be irrigated	*Intensity of irrigation on Ayacut*	*Area proposed to be irrigated*	*Intensity of irrigation on Ayacut*	*Area proposed to be irrigated*	*Intensity of irrigation on Ayacut*
	thousand acres	*percentage*	*thousand acres*	*percentage*	*thousand acres*	*percentage*
Kharif or *Abi*	970.0	100.0	880.0	100.0	150.0	100.0

Note : 150,000 *acres of 2nd crop in the Krishna Delta area to be irrigated by supplies from this project has been included in the figures given in* **1A-K.7-A.1** *since the development has already taken place with supplies temporarily obtained from Tungabhadra storage*

11. Normal rainfall and river supply proposed to be diverted

(i) Nagarjunsagar Right Canal

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....*inches*.....			.....*T.M.C*.....	
June	1.5 to 4	5.0	1.8	3.72	0.13
July	3 to 6	7.3	2.7	21.19	0.72
August	3 to 6	8.1	1.8	24.56	0.83
September	4 to 6	11.4	2.8	20.31	0.71
October	6	15.5	0.7	19.43	0.66
November	2 to 4	9.8	0.5	18.13	0.64
December	0.3 to 1.0	3.0	Nil	1.88	0.06
January	0.3	Negligible	,,	Nil	—
February	0.3 to 0.5	,,	,,	,,	—
March	0.3 to 0.5	,,	,,	,,	—
April	0.5 to 0.8	,,	,,	,,	—
May	1.5	,,	,,	0.79	0.03
Total	**22.7 to 36.6**			**110.01**	

(ii) Nagarjunasagar Left Canal

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....*inches*.....			.....*T.M.C*.....	
June	3.5 to 5	6.8	1 6	6.11	0.21
July	4 to 8	9.9	2.5	29.47	1.00
August	4 to 6	8.4	2.9	29.51	1.00
September	6	9.7	3.3	28.38	1.00
October	4	8.6	1.3	23.86	0.81
November	1.5 to 2	6.3	0.1	12.81	0.45
December	0.3	1.3	Nil	0.40	0 01
January	0.1 to 0.3	Negligible	,,	Nil	—
February	0.2 to 0.5	,,	,,	,,	—
March	0.3	,,	,,	,,	—
April	0.8	,,	,,	,,	—
May	1.5	,,	,,	1.14	0.04
Total	**26.2 to 34.7**	,,	,,	**131.68**	

(iii) New Krishna West Canal

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....*inches*.....			.....*T.M.C*.....	
June	4.0	4.9	0.5	3.08	0.54
July	6.0	12.2	2.3	4.66	0.79
August	6.0	9.6	2.9	4.05	0.69
September	6.0	9.4	2.9	3.60	0.63
October	7.0	16.5	2.1	3.41	0.58
November	4.5	17.6	0.1	2.19	0.38
December	0.6	5.5	0.1	0.94	0.16
January	0.3	0.2	0.1	Nil	—
February	0.4	1.3	Nil	,,	—
March	0.5	1.2	Nil	,,	—
April	0.6	1.5	0.1	,,	—
May	1.5	6.6	0.1	,,	---
Total	**38.3**			**21.93**	

12. Not available

13. (a) Characteristics of soils in the commanded area

Right Canal — Black soils (clay loams to clays) predominate in upper reaches. After miles 57 red soils (sandy loams) predominate; distribution roughly equal

Left Canal — Red soils constitute 85 percent of Ayacut, black soils 15 percent

New Krishna West Canal — Black soils

(b) Has any study been made of the likely effect of the introduction of irrigation on soils characteristics ?

No

14. Existing pattern of cultivation in the area proposed to be irrigated

(i) Nagarjunasagar Right Canal

District	Perennial		Kharif				Continued below
	Percentage of principal crops	Total area (T. acres)	Percentage of principal crops				
	Perennial		Paddy	Cholam	Sajja	Groundnut	
Guntur	1	10	2	28	9	9	
Nellore	3	24	10	10	9	—	
Kurnool	—	—	6	—	7	—	

Continued from above	District	Kharif (continued)						Total area (T. acres)	Rabi		Continued below
		Percentage of principal crops									
		Ragi	Korra	Samai	Castor	Vargia	Others		Paddy	Cotton	
	Guntur	—	—	—	—	—	9	738.0	—	1	
	Nellore	—	—	—	—	8	21	448.0	3	3	
	Kurnool	6	27	6	8	—	6	19.0	1	7	

Continued from above	District	Rabi (contd.)						Total area (T. acres)	Total cropped area (T. acres)
		Percentage of principal crops							
		Other cereals	Tobacco	Cholam	Vargia	Horsegram	Others		
	Guntur	18	11	—	—	—	12	536.0	1284.0
	Nellore	—	—	21	—	—	12	300.0	773.0
	Kurnool	—	—	9	7	8	5	11.0	30.0

Note :—Figures furnished above are approximate, covering the Ayacut area and are based on the season and crop reports of Andhra Pradesh.

(ii) Nagarjunasagar Left Canal

District	Perennial		Kharif					
	Percentage of principal crops	Total area (T. acres)	Percentage of principal crops					Continued below
	Perennial		Paddy	Cholam	Sajja	Ground-nut	Castor	
Nalgonda	—	—	6	7	13	15	8	
Khammam	4	12	9	11	—	11		
Krishna	—	—	7	52	2	16	—	

District	Kharif (continued)			Rabi			
	Green gram	Others	Total area (T. acres)	Percentage of principal crops			Continued below
				Paddy	Cotton	Cholam	
Continued from above							
Nalgonda	8	5	188.0	6	1	16	
Khammam	19	6	166.0	—	—	38	
Krishna	15	2	259.0	—	—	—	

District	Rabi (continued)			Total cropped area (T. acres)
	Horse gram	Others	Total area (T. acres)	
Continued from above				
Nalgonda	—	15	115.0	303.0
Khammam	—	2	119.0	297.0
Krishna	2	4	17.0	276.0

Note :— Figures furnished above are approximate, covering the Ayacut area and based on the season and crop reports of Andhra Pradesh.

15. Proposed pattern of irrigated cultivation

	Kharif		*Total area (T. acres)*
	Percentage of principal crops		
	Paddy	*Others**	
Nagarjunasagar Right Canal	33	76	970
Nagarjunasagar Left Canal	65	35	880
New Krishna West Canal (*Abi*)	100	—	150

**cotton, groundnut, millets, maize, and jowar*

16. Duty and Delta at canal head (as anticipated)

	Duty (acres per mean cusec)		*Delta (feet)*		
	Kharif		*Kharif*		*Overall*
	Paddy	*Others*	*Paddy*	*Others*	
Nagarjunasagar Right Canal	83	166	3.9	2.0	2.6
Nagarjunasagar Left Canal	70	146	4.4	1.7	3.4
New Krishna West Canal	113	—	3.4	—	3.4

17 (a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

974 tanks; irrigating 52,200 acres excluded from the Ayacut

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

Area irrigated by wells is insignificant

18. Quantum of river supplies available in relation to withdrawals

River supply data at the site not available. The adequacy or otherwise of river suuplies for this project would also be governed by the requirements of an integrated basin-wide plan

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power ; water supply (month-wise), if any, required for these aspects ; financial returns

Nil

23. Extent and type of area submerged by reservoir

The entire submergence lies in Andhra Pradesh. Out of a total submergence of 70,400 acres (at R.L. 590.0), 28,110 acres is agricultural land ; the rest is mostly hills, scrub jungle and waste land (detailed particulars are not available).

24. Total cost of the scheme Rs. 1,39,53 lakhs (1962)

25. Financial return of the scheme 1.40 percent

26. Cost per acre irrigated Rs. 649

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rainfed cultivation to irrigated agriculture

29. Special features of the scheme

An estimate of the 1st phase of Nandikonda Project 1954 was prepared in October 1956. The estimate was actually sanctioned in November, 1960. The revised estimate now submitted for sanction provides for a number of modifications which have been incorporated in the particulars given against items 1 to 28 above.

The main features or the earlier estimates, which are different from the particulars given above, are as follows :

(1) Both in the 1956 estimate and in the sanctioned estimate, the full reservoir level was R.L. 525, minimum pond level (for irrigation) R.L. 490 and a live storage of 1.5 M.A.F. The dam was to be 364 feet high.

(2) The Nagarjunasagar Left Bank Canal was two-seasonal, 1st crop 670,000 acres and 2nd crop 120,000 acres.

(3) The 1956 estimate also envisaged an irrigation of 1.5 lakh acres, first crop, and 1.5 lakh acres, second crop, in the Krishna delta. The estimate did not include any financial provision for any new work in connection with this irrigation in the delta. The statements of financial returns, however, took account of revenues from this first crop and second crop irrigation in the Krishna delta. The sanctioned estimate makes provision of Rupees 1,50 lakhs, under Distributaries of Right Bank Canal Unit, as "additional provision required for constructing the necessary irrigation channels for the development of 1.5 lakh acres first crop on the basis of Rs. 100* per acre. It may be mentioned that the 1956 estimate, while envisaging an additional Ayacut of 1.5 lakh acres of first crop in the Krishna delta, did not provide for the cost of constructing the necessary irrigation channels. This omission has now been rectified." It is further stated "as regards the first crop under the Krishna delta, as the area originally contemplated has since been covered by the Krishna Barrage, it is proposed to redistribute this area within the accepted Ayacut of the Nagarjunasagar Project." For this purpose, the new Krishna West Canal has been proposed taking off as an independent canal about 8 miles above the Krishna Barrage with F.S.L. at head R. L. 56.0.

(4) According to the sanctioned estimate, the head regulator and the head reach tunnel of the Left Bank Canal were to be built for a discharge of 15,000 cusecs.

*against Rs. 35 per acre for the other distribution on the Nagarjunasagar canals

(5) The annual diversion by the Nagarjunasagar Right and Left Canals as originally proposed for the first phase of the 1954 project (for 970,000 acres 1st crop on the Right Canal and for 670,000 acres 1st crop and 120,000 acres 2nd crop on the Left Canal) was 262 T.M.C.

(6) Of the total Ayacut of 2,000,000 acres under this project 813,000 acres are outside the drainage basin of the Krishna.

TUNGABHADRA PROJECT HIGH LEVEL CANAL STAGE I

2C1-K. 8-A. 2/My-3

1. **Name of State** — Andhra Pradesh and Mysore (formerly in Madras)

2. **Scope of the scheme or system**

Irrigation scheme; flow-cum-storage; Ayacut: Andhra Pradesh 119,115 acres and Mysore 70,300* acres; total 189,415 acres

**According to Andhra Pradesh, this figure should be* 68,000 *acres and the total reduced accordingly*

3. **Source of supply**

Tungabhadra at Mallapuram/**Krishna**

Considerable upstream utilisation both existing and contemplated

4. **Description of the reservoir or tank** — Same as under **2B-K.8-A.2/My.2**

5. **Description of the headworks**

Head regulator: right bank, 10 vents, each 6 feet × 12 feet

Mid-Pennar regulator: barrage, 3,710 feet long, about 85 feet high, spillway capacity 160,400 cusecs

River sluices: 4 numbers, 5 feet × 9 feet each, total capacity 2,700 cusecs

Head sluices: particulars not available

6. **Description of the canals**

(i) Tungabhadra High Level Canal (contour); right bank; 122 miles long (first 68.75 miles in Mysore, rest in Andhra Pradesh); one seasonal; unlined; authorised capacity **2,300 cusecs** at head and **1,468**† **cusecs**, according to Andhra Pradesh, and **1,398*** **cusecs**, according to Mysore, at Mysore-Andhra Pradesh border

(ii) Mid-Pennar North Canal (contour); left bank; 25 miles long; one seasonal; unlined; authorised capacity **145 cusecs**

(iii) Mid-Pennar South Canal (contour); right bank; 50 miles long; (branch 11 miles long); one seasonal; authorised capacity **800 cusecs**

† *Based on a discharge at head of* 2,300 *cusecs; transmission losses of* 350 *cusecs for the entire length of the canal both in Mysore and Andhra Pradesh; and Andhra Pradesh shares of* 65 *percent from the balance,* 1,950 *cusecs*

* *Based on a discharge at head of* 2,300 *cusecs; transmission losses upto border* 150 *cusecs and Mysore's share of* 35 *percent from the balance* 2,150 *cusecs.*

7. (a) **Nature of investigation carried out upto-date** — Project sanctioned

(b) **Actual or probable date of beginning of construction** — 1957-58

8. **Probable date of beginning of operation** — 1963-64

IRRIGATION ASPECTS

9. Gross commanded area, culturable commanded area and Ayacut, district-wise

District	Mysore	Andhra Pradesh				Total	Grand Total
	Tungabhadra	H.L. Canal	M.P.N. Canal	M.P.S.Canal			
	Bellary	Anantapur	Anantapur	Anantapur	Cuddapah		
	..... thousand acres						
G.C.A.	133.0	79.6	50.3	246.9	27.1	403.9	536.9
C.C.A.	111.2	69.1	44.0	204.2	19.1	336.4	447.6
Ayacut	70.3*	35.0	13.5	64.6	6.0	119.1	189.4

**According to Andhra Pradesh this figure should be 68,000 acres and the total should be reduced accordingly*

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated			Intenstiy of irrigation on Ayacut
	Mysore	Andhra Pradesh	Total	
	..... thousand acres			
Kharif	70.3	119.1	189.4	100.0 percent

11. Normal rainfall and river supply proposed to be diverted

(*i*) Tungabhadra High Level Canal—1st Stage

Month	Rainfall						River supply proposed to be diverted†			Capacity factor
	Normal		Minimum		Maximum		Mysore	Andhra Pradesh	Total	
	Mysore	Andhra Pradesh	Mysore	Andhra Pradesh	Mysore	Andhra Pradesh				
1	2	3	4	5	6	7	8	9	10	11
	..... inches						..... T.M.C.			
June	2.0	2.0	6.4	3.8	0.5	0.4	1.56	2.00	3.56	0.60
July	2.4	2.0	5.7	3.3	0.2	0.5	1.85	4.01	5.86	0.95
August	2.1	4.0	5.2	6.9	0.1	0.4	1.85	4.01	5.86	0.95
September	6.2	6.0	13.8	8.6	0.9	1.2	1.79	3.88	5.67	0.95
October	4.2	4.0	17.3	11.1	0.2	1.0	1.42	4.01	5.43	0.88
November	2.1	1.5	5.7	2.9	Nil	Nil	0.39	2.01	2.40	0.40
December	0.2	0.2	1.7	0.7	,,	,,	Nil	Nil	Nil	—
January	0.1	0.1	0.9	0.1	,,	,,	,,	,,	,,	—
February	0.5	0.3	2.3	0.3	,,	,,	,,	,,	,,	—
March	0.2	0.3	1.9	0.3	,,	,,	,,	,,	,,	—
April	0.7	0.8	2.9	2.3	,,	,,	,,	,,	,,	—
May	1.8	1.8	3.4	5.2	0.2	0.2	,,	,,	,,	—
Total	**22.5**	**23·0**					**8.86***	**19.92****	**28.78**	—

†*The figures given for Andhra Pradesh include the diversions shown below for the Mid-Pennar Canals*

**Includes all transmission losses upto mile 68*

***Includes all transmission losses below mile 68*

(ii) Mid Pennar North Canal (Andhra Pradesh)

Month	Rainfall			River supply proposed to be diverted	Capacity factor
	Normal	Maximum	Minimum		
1	2	3	4	5	6
	..... inches			..... T.M.C	
June	2.5	4.5	Nil	0.10	0.27
July	3.0	8.7	0.1	0.30	0.77
August	4.0	7.0	0.6	0.34	0.88
September	5.5	11.0	Nil	0.31	0.82
October	4.0	10.1	1.3	0.34	0.87
November	1.5	4.2	Nil	0.18	0·48
December	0.2	3.2	,,	Nil	—
January	0.1	Nil	,,	,,	—
February	0.3	0.4	,,	,,	—
March	0.3	0.9	,,	,,	—
April	0.8	0.8	,,	,,	—
May	1.8	10.4	0.1	,,	—
Total	**24.0**			**1.57***	

**Included in the withdrawals shown for main canal*

(iii) Mid Pennar South Canal (Andhra Pradesh)

Month	Rainfall			River supply proposed to be diverted	Capacity factor
	Normal	Maximum	Minimum		
1	2	3	4	5	6
	..... inches			..... T.M.C	
June	2.3	5.3	0.2	0.55	0.27
July	2.3	5.3	0.8	1.57	0.73
August	4.0	4.3	0.1	1.81	0.84
September	6.0	8.1	1.4	1.62	0·78
October	4.0	9.1	1.1	1.70	0 79
November	2.5	5.2	Nil	0.98	0.47
December	0.8	1.0	,,	Nil	—
January	0.1	0.1	,,	,,	—
February	0.3	1.0	,,	,,	—
March	0.3	0.2	,,	,,	—
April	0.8	2.5	,,	,,	—
May	1.8	4.6	0.2	,,	—
Total	**25.2**			**8.23***	

**Included in the withdrawals shown above for main canal*

12. Not available

13. **(a) Characteristics of soils in the commanded area**

Mysore	Andhra Pradesh
Black and red gravelly soils; black soil contains about 65 to 80 percent finer fractions with low permeability and high base status and has good water holding capacity; red gravely loams are brownish red to deep red in colour, shallow to deep loamy to sandy in texture, and intermixed with gravel and pebbles.	Mostly black soil varying from light sandy to deep black in texture; red soils of gravelly nature here and there. Below 3 to 4 feet from the surface; hard or disintegrated rock

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?

No

14. Existing pattern of cultivation in the area proposed to be irrigated

	Kharif						*Rabi*					*Total cropped area (T. acres)*
	Percentage of principal crops					*Total area (T. acres)*	*Percentage of principal crops*				*Total area (T. acres)*	
	Paddy	*Jowar*	*Nanave*	*Groundnut*	*Others*		*Paddy*	*Jowar*	*Cotton*	*Others*		
Mysore	0.4	8.0	23.0	10.0	—	31.2	—	22.0	33.0	0.6	39.1	70.3
Andhra Pradesh	—	15.0	—	27.6	51.5	50.2	13.2	—	7.0	5.7	17.5	67.7
Total												**138.0**

15. (a) Proposed pattern of irrigated cultivation

	Kharif		
	Percentage of principal crops		*Total area (T. acres)*
	Paddy	*Others*	
Mysore	33.3	66.7	70.3
Andhra Pradesh	33.3	66.7	189.4

(b) Are there any rules for regulating crop pattern ?

Mysore : Legislation under consideration

Andhra Pradesh : Dry and wet areas will be localized

16. Duty and Delta at canal head (as anticipated)

	Duty (acres per mean cusec)		*Delta (feet)*		
	Kharif		*Kharif*		*Overall*
	Paddy	*Others*	*Paddy*	*Others*	
Mysore	45	140	6.7	1.8	2.9
Andhra Pradesh	55	150	5.6	1.6	3.8

17 (a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

Mysore	Andhra Pradesh
4 tanks, with a total Ayacut of 1,914 acres, not included in the project	12 tanks, irrigating 1,073 acres in H.L. Canal area, 5 tanks irrigating 974 acres in the M.P. North Canal area and 33 tanks irrigating 8,348 acres in the M.P. South Canal, excluded from project

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom.

Mysore	Andhra Pradesh
31 wells irrigating 131 acres, not included in the project	275 wells in Tungabhadra H.L. Canal area, 65 wells in M.P. North Canal area, and 1,536 wells in M.P. South Canal area; irrigated area not known but area excluded from the project

18. Quantum of river supplies available in relation to withdrawals

Adequacy or otherwise of river supplies to meet project requirements would be governed by the requirement of an irrigated basin-wide plan

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power ; water supply (month-wise), if any, required for these aspects ; financial returns

Nil

23. Not applicable

24. Total cost of the scheme

Rs. 13,00 lakhs (1957), common portion Rs. 5,99 lakhs

Mysore channels Rs. 47 lakhs and Andhra Pradesh channels Rs. 654 lakhs

25. Financial return of the scheme 1.29 percent

26. Cost per acre irrigated

Mysore Rs. 316

Andhra Pradesh Rs. 876

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture, reclamation of barren lands

29. Special features of the scheme

Out of the total Ayacut of 189,400 acres under this project 86,400 acres are outside the drainage basin of the Krishna in Andhra Pradesh

TUNGABHADRA HYDRO-ELECTRIC PROJECT STAGE II 2C1-K.8-A.3/My.4

1. Name of State Andhra Pradesh and Mysore (formerly in Madras)

2. Scope of the scheme or system

Hydro-electric scheme ; number and size of power units :
right side, 2×9000 k.W. at dam, operation head, 90 feet to 39 feet ; and
1×9000 k.W. at Hampi, operation head, 104 to 119 feet

3. Source of supply

Tungabhadra at Mallapuram (Mysore)/Krishna

4. to 6. As for **2B-K.8-A.2/My.2**

7. (a) Nature of investigations carried out up-to-date Project sanctioned

(b) Actual or probable date of beginning of construction May 1961

8. Probable date of beginning of operation End of 1963

IRRIGATION ASPECTS

9. to 18. Not applicable

POWER ASPECTS

19. River supply proposed to be diverted and operation head

Month	*Range of operation head*	*Supply passing through turbines (cusecs) inclusion of units installed in Stage I*	
		As proposed by Mysore†	*As proposed by Andhra Pradesh**
June	Gross head varies from 90 feet to 41 feet	1,545	2,600
July		1,545	2,600
August		1,545	2,600
September		1,232	2,600
October		1,432	2,600
November		1,800	2,600
December		1,800	2,600
January		1,800	2,600
February		1,117	2,600
March		291	2,600
April		291	1,500
May		918	1,000
Total		**40.31 T.M.C.**	**74.86 T.M.C.**

† *These releases are equal to those required for irrigation in the low level canal and may be exceeded when the reservoir is surplussing*

* *These releases are subject to prior claims of irrigation interests under the Tungabhadra reservoir and of irrigation interests lower down, as of 1951*

20. Proposed disposal of tail-race waters

Tail race waters from the Tungabhadra dam power house are passed on to the Hampi power house at mile 14 of the Tungabhadra right bank low level canal for generation of power, utilising a pressure head of 110 feet.

Tail race waters from the Hampi power house are partly diverted for irrigation purposes, through the Tungabhadra right bank low level canal and balance let into the river.

21. Quantum of river supplies available in relation to withdrawals

See foot notes under item 19 above

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

To be integrated with a thermal plant at Nellore, capacity 30,000 k.W.

23. Extent and type of area submerged by reservoir Nil

24. Total cost of the scheme

Rs. 7,70 lakhs (1961) (including 80 percent cost of the joint works, cost of 30 m. W. thermal plant at Nellore, and cost of transmission lines.)

25. Financial return of the scheme 4.56 percent (in the 10th year of operation)

26. Not applicable

27. Cost per k.W. power produced

Rs. 1,540/- per k.W. installed (including capital cost of 1st and 2nd stages, 30 m.W. set at Nellore, and transmission lines)

28. Main features and purpose of the scheme Power generation

1. Name of State Maharashtra (formerly in Bombay)

2. Scope of the scheme or system

Power scheme; flow-cum-storage; 580,000 k.W. installed

3. Source of supply

Koyna at Helwak/**Krishna**

Utilisation upstream : Nil

4. Description of the dam and reservoir or tank

Live storage	...	69.0 T.M.C
Dead storage	...	30.0 ,,
Carry-over	...	12.5 ,,
Annual reservoir losses	...	4.5 ,,
Filling period	...	15th June to end of August
Depletion period	...	June to May
Catchment area	...	344 square miles
Area submerged	...	28,500 acres
Full reservoir level	...	R.L. 2,128
Dead storage level	...	R.L. 2,049
Dam	:	concrete, 2,900 feet long, 271 feet high
Spillway	:	280 feet long, capacity 202,000 cusecs
Power penstocks	:	(i) two penstocks 96 inches diameter, embedded in dam
		(ii) head race tunnel 21 feet diameter, with 4 pressure shafts varying in diameter from 10 feet to 8 feet 6 inches

5. and 6. Not applicable

7. (a) Nature of investigations carried out up-to-date Project sanctioned

(b) Actual or probable date of beginning of construction January 1954

8. Probable date of beginning of operation One unit of 60,000 k.W. May 1962

9. to 18. Not applicable

POWER ASPECTS

19. River supply proposed to be diverted and operation head

Month	*Range of operation head (feet)*		*Supply passing through turbines (cusecs)*	
	Main Power House at Mankarwadi	*Power House at foot of dam*	*Main Power House at Mankarwadi*	*Power House at foot of dam*
June	1,614	170	2,140	1,400
July	1,048	189	,,	2,110
August	1,652	210	,,	2,110
September	1,673	230	,,	2.110
October	1,680	237	,,	1,535
November	1,674	231	,,	960
December	1,667	224	,,	960
January	1,659	216	,,	960
February	1,651	208	,,	825
March	1,642	199	,,	690
April	1,632	189	,,	690
May	1,622	178	,,	690
Total			**67.5 T.M.C.**	**39.6 T.M.C.**

Main Power House at Mankarwadi : 4 units of 60,000 k.W. and 4 units of 75,000 k.W.

Power House at foot of dam : 2 units of about 20,000 k.W.

20. Proposed disposal of tail-race waters

The tail-race water from Main Power House at Mankarwadi (67.5 T.M.C.) will be discharged into Vashishti river. Part of this will be utilised for irrigation of 16,000 acres in fair weather season on both banks of Baitarni and Vashishti rivers, and for water supply to fifteen villages and towns of Chiplun, Dapoli and Guhaghar of Ratnagiri District. It will also provide water to industries between Chiplun and Dabhol ports on the Vashishti river. The balance will remain unused for the time being

The tail-race water from Power House at foot of dam will flow down the Koyna river and diverted for irrigation project

21. Quantum of river supplies available in relation to withdrawals

During the 12 years ending 1960, the average river flow was 128 T.M.C., the range being from 90-158 T.M.C. River supplies will be adequate for project requirements in 8 years out of 12

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Will provide stored water for irrigation, water supply and industrial use (see item 20 above)

23. Extent and type and area submerged by reservoir

The entire submergence lies in Maharashtra

24. Total cost of the scheme Rs. 52,57 lakhs

25. Financial return of the scheme 12.19 percent

26. Not applicable

27. Cost per k.W. power produced

Rs. 1,130 per k.W. (firm); cost of seasonal power not available

28. Main features and purpose of the scheme Power development

29. Special features of the scheme

67.5 T.M.C. of water will be diverted outside the Krishna drainage basin

KHADAKWASLA PROJECT—STAGE I

5C1-K.5-M.2

(Remodelling and extension of Mutha Canals **13A-K.5-M.6**)

1. Name of State Maharashtra (formerly in Bombay)

2. Scope of the scheme or system

Irrigation scheme; flow-cum-storage; additional C.C.A. 65,200 acres

3. Source of supply

(i) Ambi at Panset (ii) Mosi at Warasgaon (iii) Mutha at Khadakwasla Mutha/Mula-Mutha/Bhima/**Krishna**

4. Description of the reservoir or tank

	Panset	Warasgaon
Live storage	7.3 T.M.C.	7.4 T.M.C.
Dead storage	0.3 T.M.C.	0.2 T.M.C.
Carry-over	0.3 T.M.C.	0.4 T.M.C.
Annual reservoir losses	0.3 T.M.C.	0.3 T.M.C.
Filling period	.....June to September.....	
Depletion period	.....June to May.....	
Catchment area (square miles)	47	51
Area submerged (acres)	3,100	3,250
Full reservoir level	R.L. 2,064	R.L. 2,065
Minimum pond level	R.L. 1,950	R.L. 1,950

5. Description of the headworks

	Panset	Warasgaon
Dam :	earthen, 2,900 feet long, 168 feet high	2,380 feet long, 172 feet high
Spillway :	ungated, capacity 48,000 cusecs	capacity 50,000 cusecs
Outlets :	An R.C.C. arched conduit in each of the dams with a control tower and two gates of 8 feet × 5 feet (one being a standby)	

6. Description of the canal

Remodelling and extension of Mutha Right Bank Canal (contour); 101 miles long; perennial; unlined; authorised capacity **1,050 cusecs**

7. (a) Nature of investigation carried out up-to-date Project sanctioned in 1958-59

(b) Actual or probable date of beginning of construction 1956-57

8. Probable date or beginning of operation 1965-66

IRRIGATION ASPECTS

9. Gross commanded area and culturable commanded area, district-wise

District	Poona	
G.C.A.	181,100	acres
C.C.A.	123,200	,,
Deduct irrigation under wells and tanks	8,000	,,
	115,200	,,
Further deduct C.C.A. under Mutha Canals	50,000	,,
Additional C.C.A. covered by this project	65,200	,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation (on 115.2 T. acres)*
Perennials	13,800 acres	12.0 per cent
Two seasonals	21,200 ,,	18.4 ,,
Kharif	23,800 ,,	20.7 ,,
Rabi	23,800 ,,	20.7 ,,
Hot weather	5,800 ,,	5.0 ,,
Total	**88,400** ,,	**76.8** ,,
Deducting area irrigated by the Mutha Canals	11,400 ,,	
Additional irrigation	77,000 ,,	

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....inches.....			*.....T.M.C.....*	
June	3.3	7.1	1.4	15th June to 14th Oct.	
July	4.4	7.3	1.2	7.4	0.67
August	3.2	9.9	0.7		
September	4.8	10.2	0.6	15th Oct. to 14th Feb.	
October	3.5	7.9	0.3	7.0	0.63
November	0.4	3.2	Nil		
December	0.2	2.1	,,	15th Feb. to 14th June	
January	0.2	1.8	,,	5.8	0.53
Fubruary	Nil	0.1	,,		
March	0.1	0.4	,,		
April	0.4	1.1	,,		
May	0.8	2.2	,,		
Total	**21.3**			**20.20**	
Add for Poona water supply				1.84	
				22.04	
Deduct present diversion by Mutha Canals				4.54	
Additional diversion				**17.50**	

12. Not available

13. (a) Characteristics of soils in the commanded area

Sandy to sandy loam 35 percent; silty loam to clayey loam 40 per cent; and clayey loam to clay 25 per cent

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?

No

14. Existing pattern of cultivation in the areas proposed to be irrigated

Perennial			Two seasonal			Kharif				Rabi				Hot weather			
Percentage of principal crops		Total area (T. acres)	Percentage of principal crops		Total area (T. acres)	Percentage of principal crops			Total area (T. acres)	Percentage of principal crops			Total area (T. acres)	Percentage of principal crops		Total area (T. acres)	Total cropped area (T. acers)
Sugar-cane	Others		Cotton	Others		Paddy	Bajri	Others		Wheat	Jowar	Others		Fodder			
3.2	0.2	4.2	0.9	2.8	4.6	0.4	10.1	7.7	22.3	1.2	64.3	7.5	90.0	1.7		2.1	123.2

15. (a) Proposed pattern of irrigated cultivation*

Perennial			Two seasonal		Kharif		Rabi		Hot weather		Grand Total (T. acres)
Percentage of principal crops		Total area (T. acres)	Percentage of principal crops	Total area (T. acres)	Percentage of principal crops	Total area (T. acres)	Percentage of principal crops	Total area (T. acres)	Percentage of principal crops	Total area (T. acres)	
Sugarcane	Others		Others		Cereals		Cereals		Fodder		
13.0	2.6	13.8	24.0	21.2	26.9	23.8	26.9	23.8	6.6	5.8	88.4

**inclusive of present irrigation under Mutha Canals*

(b) Are there any rules for regulating crop pattern ?

No ; but sanctions will be regulated to conform to the proposed crop pattern

16. Duty and Delta at distributary head (as anticipated)

	Duty (acres per mean cusec)			Delta (feet)			
	Kharif	Rabi	Hot weather	Kharif	Rabi	Hot weather	Total
Sugarcane	65	70	50	3.7	3.5	4.8	12.0
Other perennials	98	105	75	2.5	2.3	3.2	8.0
Two seasonal	130	140	—	1.8	1.7	—	3.5
Kharif	195	—	—	1.2	—	—	1.2
Rabi	—	210	—	—	1.1	—	1.1
Hot weather	—	—	100	—	—	2.4	2.4

Overall Delta at canal head 5.3 feet

17. (a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

Five tanks irrigating about 4,600 acres, excluded from C.C.A.

(b) Number of wells in operation in the area proposed to be irrigated and area irrigated therefrom

About 1,700 wells, each capable of irrigating about two acres of seasonal crops (well irrigation about 3,400 acres excluded from the C.C.A.)

18. Quantum of river supplies available in relation to withdrawals

There is enough water in the river to meet the requirements of both canals, the average (15 years) surplus would be about 27.0 T.M.C.

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Water supply to Poona City

23. Extent and type of area submerged by reservoir

	Panset	Warasgaon
(a) Culturable	1,100	1,150
(b) Waste	2,000	2,100
Total	3,100	**3,250**

The entire submergence is in Maharashtra

24. Total cost of the scheme Rs. 11,29 Lakhs (inclusive of water supply)

25. Financial return of the scheme 3.78 percent

26. Cost per acre irrigated Rs. 1,300

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture, water supply to Poona City

29. Special features of the scheme

A revised project is being prepared to include this project and Khadakwasla Project Stage II, 38C.3-K.5-M.23

VIR DAM PROJECT

6C1-K.5-M.3

1. **Name of State** Maharashtra (formerly in Bombay)

2. **Scope of the scheme or system**

Irrigation scheme; flow-cum-storage; C.C.A. 448,000 acres already covered by Nira Canals **(See 15A-K.5-M.8)**

3. **Source of supply**

Nira at Vir/Bhima/**Krishna**

Upstream storage at Bhatghar **(See 15A-K.5-M.8)**

4. **Description of the reservoir of tank**

	Reservoir at Vir
Live storage	9.4 T.M.C.
Dead storage	0.4 ,,
Carry-over	0.6 ,,
Annual reservoir losses	0.3 ,,
Filling period	June to September
Depletion period	June to May
Catchment area	678 square miles
Area submerged	6,060 acres
Full reservoir level	R.L. 1,902
Minimum pond level	R.L. 1,845

5. **Description of the head-works**

Dam :	masonry with earthen flanks, masonry 2,724 feet long, 114 feet high, earthen flanks 8,563 feet long, 60 feet high
Spillway :	gated, with 9 gates of 41 feet × 27 feet each, total capacity 182,000 cusecs
Outlets :	three, capacity 540 cusecs each on left flank,
	four, capacity 500 cusecs each on right flank and
	four, capacity 750 cusecs each on right flank

6. **Description of the canal**

Remodelling of Nira Right Bank Canal (contour); 106.5 miles long; perennial; unlined; authorised capacity **1,600 cusecs**

7. **(a) Nature of investigations carried out up-to-date**	Project sanctioned
(b) Actual or probable date of beginning of construction	1956-57
8. **Probable date of beginning of operation**	October 1962

IRRIGATION ASPECTS

9. **Gross commanded area and culturable commanded area, district-wise**

Same as in **15A-K. 5-M.8**

10. Area proposed to be irrigated annually and intensity of irrigation

Nira Right Bank Canal

	Area proposed to be irrigated		*Intensity of irrigation*	
Sugarcane	18,400	acres	4.1	percent
Other perennial	1,100	,,	0.2	,,
Two Seasonal	3,400	,,	0.8	,,
Kharif	85,000	,,	19.0	,,
Rabi	71,200	,,	15.9	,,
Total	**179,100**	,,	**40.0**	,,
Deduct area irrigated under **15A-K. 5-M.8**	78,100	,,		
Additional irrigation	101,000	,,		

11. Normal rainfall and river supply proposed to be diverted

Nira Right Bank Canal

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....*inches*.....			.....*T.M.C*.....	
June	2.8	9.1	0.6	3.15	0.76
July	2.5	6.5	0.9	3.91	0.91
August	1.8	10.3	0.2	3.91	0.91
September	5.6	13.1	0.5	3.13	0.75
October	3.3	6.5	0.6	2.96	0.69
November	1.2	5.9	Nil	4.30	1.04
December	0.2	1.9	,,	1.48	0.35
January	0.2	2.8	,,	2.96	0.69
February	Nil	Nil	,,	1.67	0.43
March	0.1	1.1	,,	1.85	0.43
April	0.5	1.9	,,	1.79	0.43
May	1.1	3.8	0.1	1.79	0.42
Total	**19.3**			**32.90**	
Deduct present diversion under **15A-K-5-M.8**				18.52	
Additional diversion				**14.38**	
Nira Left Bank Canal	Same as in **15A-K.5-M. 8**				

The figures in column 5 include the quantity required to replenish the tail tank **at** *Tisangi*

12. Not available

13. Characteristics of soils in the commandad area

Soil survey carried out in part of Nira Canal area indicates the distribution as sandy to sandy loam 63 percent, silty loam to clayey loam 28 percent and clayey loam to clay 9 percent. The depth of soil crust exceeds 18 inches in more than 40 percent of the area and between 12 inches and 18 inches in the remaining area

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?

No

14. Existing pattern of cultivation in the area proposed to be irrigated (under Right Bank Canal)

Perennial			*Two seasonals*			*Kharif*				*Rabi*				
Percentage of principal crops		*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T. acres)*	*Percentage of principal crops*			*Total area (T. acres)*	*Percentage of principal crops*			*Total area (T. acres)*	*Total cropped area (T. acres)*
Sugar-cane	*Others*		*Cotton*	*Ground-nut*		*Paddy*	*Bajri*	*Others*		*Jowar*	*Wheat*	*Others*		
4.5	0.2	20.5	1.6	2.9	19.2	0.4	11.0	4.2	68.1	68.5	1.3	5.4	329.1	436.9

15. (a) Proposed pattern of irrigated cultivation (on the Right Bank Canal)

Perennial			*Two seasonals*		*Kharif*		*Rabi*		
Percentage of principal crops		*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Grand total (T. acres)*
Sugarcane	*Others*		*Others*		*Others*		*Jowar and Wheat*		
10.3	0.6	19.5	1.9	3.4	47.4	85.0	39.8	71.2	179.1

(b) Are there any rules for regulating crop pattern ?

No; but sanctions will be regulated to conform to the proposed crop pattern

16. Seasonal Duty and Delta at distributary head (as anticipated)

Duty (acres per mean cusec)			*Delta (feet)*		
Kharif	*Rabi*	*Hot weather*	*Kharif*	*Rabi*	*Hot weather*
81	86	29	3.0	2.9	8.3

Overall delta at canal head 4.2 feet

17 (a) Number of tanks in operation in the area proposed to be Irrigated and the area irrigated therefrom

Nil

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

1,735 wells: irrigating 4,900 acres included in C.C.A.

18. Quantum of river supplies available in relation to withdrawals

Except in 2 years out of 19, river supplies are adequate to meet the requirements of both canals; the average (19 years) surplus is about 28 T.M.C.

19. to **21.** Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. Extent and type of area submerged by reservoir

Total area of submergence, 6,070 acres lies entirely in Maharashtra (culturable land 4,850 acres and waste land and forest 1,220 acres)

24. Total cost of the scheme Rs. 5,58.01 lakhs

25. Financial return of the scheme 3.28 percent

26. Cost per acre irrigated Rs. 560

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture 101,000 acres

KADA PROJECT

1. Name of State Maharashtra (formerly in Hyderabad)

2. Scope of the scheme or system

Irrigation Scheme: flow-cum-storage; C.C.A. 7,400 acres

3. Source of supply

Kari at Nimbori/Sina/Bhima/Krishna

Utilisation upstream : nil

4. Description of the reservoir or tank

Live storage	...	0.31 T.M.C.
Dead storage	...	0.05 T.M.C.
Carry-over	...	Nil
Annual reservoir losses	...	0.06 T.M.C.
Filling period	...	15th June to 30th September
Depletion period	...	15th June to 14th February
Catchment area	...	65 square miles
Area submerged	...	740 acres
Full reservoir level	...	R.L. 1,987
Minimum pond level	...	R.L. 1,969

5. Description of the headworks

Dam : earthen, 5,700 feet long, 51 feet high

Spillway : capacity 54,900 cusecs

Head regulator : one vent, 3 feet × 4 feet, capacity 44 cusecs

6. Description of the canal

Kada Canal (contour): left bank: 13 miles long: two-seasonal: unlined: authorised capacity 44 cusecs

7. (a) Nature of investigations carried out up-to-date Project sanctioned

(b) Actual or probable date of beginning of construction April 1959

8. Probable date of beginning of operation By end of 1963

IRRIGATION ASPECTS

9. Gross commanded area and culturable commanded area, district-wise

District Bhir	
G.C.A.	10,800 acres
C.C.A.	7,600 ,,
Deduct area under well irrigation	200 ,,
Net C.C.A	7,400 ,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation*
Kharif	3,500 acres	47.3 percent
Rabi	3,500 ,,	47.3 ,,
Total	**7,000** ,,	**94.6** ,,

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	..... *inches*.....			..... *T.M.C*.....	
June	5.0	12.7	0.1	15th June to	
July	4.4	11.2	0.2	14th Oct.	
August	3.6	12.1	0.1	0.18	0.39
September	6.9	15.9	0.4		
October	2.9	8.2	0.2	15th Oct. to	
November	1.0	1.7	Nil	14th Feb.	
December	0.2	1.8	,,	0.23	0.49
January	0.2	2.7	,,		
February	Nil	0.6	,,	15th Feb. to	
March	0.1	0.8	,,	14th June	
April	0.4	7.7	,,	Nil	—
May	0.8	4.9	,,		
Total	**25.5**			**0.41**	

12. Not available

13. (a) Characteristics of soils in the commanded area

Sandy to sandy loam 30 percent, silty loam to clay loam 40 percent and clay loam to clay 30 percent

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?

No

14. Existing pattern of cultivation in the area proposed to be irrigated

Two seasonal		*Kharif*					*Rabi*				
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*				*Total area (T. acres)*	*Percentage of principal crops*			*Total area (T. acres)*	*Total cropped area (T. acres)*
Others		*Paddy*	*Bajri*	*Pulses*	*Others*		*Wheat*	*Jowar*	*Others*		
1.0	0.1	0.3	12.2	9.7	7.8	2.3	5.5	58.1	5.4	5.2	7.6

15. (a) Proposed pattern of irrigated cultivation

Kharif		*Rabi*			
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T. acres)*	*Grand Total (T. acres)*
Jowar		*Wheat*	*Jowar*		
50.0	3.5	10.0	40.0	3.5	7.0

(b) Are there any rules for regulating crop pattern? No

16. Duty and Delta at canal head (as anticipated)

Duty (acres per mean cusec)			*Delta (feet)*		
Kharif	*Rabi*		*Kharif*	*Rabi*	*Overall*
210	190		1.2	1.5	1.3

17. (a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

Nil

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

93 wells, irrigating about 2 acres per well, excluded from the C.C.A.

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. Extent and type of area submerged by reservoir

Area submerged :

Culturable	...	520 acres
Waste	...	220 acres

24. Total cost of the scheme Rs. 37 lakhs

25. Financial return of the scheme 2.0 percent

26. Cost per acre irrigated Rs. 528

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture

1. **Name of State** Maharashtra (formerly in Hyderabad)

2. **Scope of the scheme or system**
Irrigation scheme ; flow-cum-storage ; C.C.A. 16,400 acres

3. **Source of supply**
Mehekari at Pimpalgaon/Sina/Bhima/Krishna
Utilisation upstream : One minor irrigation tank ; 0.06 T.M.C.

4. **Description of the reservoir or tank**

Live storage	0.42 T.M.C.
Dead storage	0.11 T.M.C.
Carry-over	Nil
Annual reservoir losses	0.09 T.M.C.
Filling period	15th June to 30th September
Depletion period	15th June to 14th February
Catchment area	131 square miles
Area submerged	800 acres
Full reservoir level	R.L. 1,948
Minimum pond level	R.L. 1,932

5. **Description of the headworks**
Dam : earthen, 3,700 feet long, 55 feet high
Spillway : capacity 77,800 cusecs
Head regulators : one vent, 4 feet × 5 feet, capacity 49 cusecs and one, 2 feet diameter pipe, capacity 12 cusecs

6. **Description of the canals**
Mehekari Right Bank Canal (contour); 12 miles long; two seasonal; unlined; authorised capacity 49 cusecs

Mehekari Left Bank Canal (contour) ; 5 miles long; two seasonal; unlined; authorised capacity 12 cusecs

7. **(a) Nature of investigation carried out upto-date** Project sanctioned
(b) Actual or probable date of beginning of construction April 1959

8. **Probable date of beginning of operation** By end of 1962

IRRIGATION ASPECTS

9. Gross commanded area and culturable commanded area, district-wise

District Bhir

	Right Bank Canal	*Left Bank Canal*	*Total*
		thousand acres	
G.C.A.	14.0	7.0	21.0
C.C.A.	11.2	5.6	16.8
Deduct area under well irrigation			0.4
Net C.C.A.			16.4

10. Area proposed to be irrigated annually and intensity of irrigation (both canals)

	Area proposed to be irrigated		*Intensity of irrigation*	
Two seasonal	400	acres	2.4	percent
Kharif	4,800	,,	29.3	,,
Rabi	4,800	,,	29.3	,,
Total	**10,000**	,,	**61.0**	,,

11. Normal rainfall and river supply proposed to be diverted (both canals)

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	inches			*T.M.C*	
June	5.0	12.7	0.1	15th June to 14th	
July	4.1	11.2	0.2	Oct.	
August	3.5	13.1	0.1	0.28	0.44
September	6.7	15.9	0.4		
October	2.8	8.2	0.1	15th Oct. to 14th	
November	1.0	10.7	Nil	Feb.	
December	0.2	1.8	,,	0.36	0.56
January	0.2	2.7	,,		
February	Nil	0.6	,,	15th Feb. to 14th	
March	0.1	0.8	,,	June	
April	0.4	7.7	,,	Nil	
May	0.8	4.2	,,		
Total	**24.8**			**0.64**	

12. Not available

13. (a) Characteristics of soils in the commanded area

Sandy to sandy loam 30 percent, silty loam to clay loam 40 percent and clay loam to clay 30 percent. A soil depth of more than 18 inches is available.

(b) Has any study been made of the likely effect of the introduction of irrigation on the soil characteristics ?

No

14. Existing pattern of cultivation in the area proposed to be irrigated

Two seasonal		*Kharif*					*Rabi*				
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*				*Total area (T. acres)*	*Percentage of principal crops*			*Total area (T. acres)*	*Total cropped area (T. acres)*
Others		*Paddy*	*Bajri*	*Pulses*	*Others*		*Wheat*	*Jowar*	*Others*		
1.0	0.2	0.3	12.2	9.7	7.8	5.0	5.5	58.1	5.4	11.6	16.8

15. (a) Proposed pattern of irrigated cultivation

Two seasonal		*Kharif*			*Rabi*			
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T. acres)*	*Grand Total (T. acres)*
Cotton		*Jowar*	*Paddy*		*Wheat*	*Jowar*		
4.0	0.4	45.0	3.0	4.8	9.6	38.4	4.8	10.0

(b) Are there any rules for regulating crop pattern ? No

16. Duty and Delta at canal head (as anticipated)

	Duty (acres per mean cusec)		*Delta (feet)*		
	Kharif	*Rabi*	*Kharif*	*Rabi*	*Total*
Two seasonal	100	100	2.4	2.5	4.9
Paddy	70	400	3.4	0.6	4.0
Kharif	210	—	1.1	—	1.1
Rabi	—	200	—	1.2	1.2
Overall delta					1.5

17. (a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

Nil

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

180 wells, irrigating about 2 acres per well; area under well irrigation is excluded from the C.C.A.

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power ; water supply (month-wise), if any, required for these aspects ; financial returns

Nil

23. Extent and type of area submerged by reservoir

Entire submergence lies in Maharashtra

24. Total cost of the scheme Rs. 52 lakhs

25. Financial return of the scheme 2.1 percent

26. Cost per acre irrigated Rs. 575/- for mixed crop

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture

1. Name of State Maharashtra (formerly in Hyderabad)

2. Scope of the scheme or system

Irrigation scheme; flow-cum-storage; C.C.A. 12,500 acres

3. Source of supply

Chandani at Pinpalwadi/Sina/Bhima/Krishna

Utilisation upstream : nil

4. Description of reservoir or tank

Live storage	...	0.53 T.M.C.
Dead storage	...	0.20 ,,
Carry-over	...	Nil
Annual reservoir losses	...	0.25 T.M.C.
Filling period	...	15th June to 30th September
Depletion period	...	15th June to 14th February
Catchment area	...	234 square miles
Area submerged	...	1,900 acres
Full reservoir level	...	R.L. 1,660
Minimum pond level	...	R.L. 1,650

5. Description of the headworks

Dam : earthen, 5,600 feet long, 58 feet high

Spillway : capacity 107,000 cusecs

Head regulator : one vent, 4 feet × 5 feet, capacity 67 cusecs

6. Description of the canal

Chandani Canal (contour); left bank ; 20 miles long; two seasonal; unlined; authorised capacity 67 cusecs

7. (a) Nature of investigations carried out up-to-date Project sanctioned

(b) Actual or probable date of beginning of construction April 1957

8. Probable date of beginning of operation By end of 1963

IRRIGATION ASPECTS

9. Gross commanded area and culturable commanded area, district-wise

District Osmanabad

G.C.A.	16,400 acres
C.C.A.	12,800 ,,
Deduct area under well irrigation	300 ,,
Net C.C.A.	**12,500** ,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation*
Two seasonal	1,200 acres	9.6 percent
Kharif	4,300 ,,	34.4 ,,
Rabi	3,700 ,,	29.6 ,,
Total	**9,200** ,,	73.6 ,,

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....*inches*.....			..... *T.M.C*.....	
June	4.2	13.1	0.8	15th June to 14th Oct.	
July	4.1	9.8	0.5	0.38	0.54
August	3.8	18.5	0.5		
September	7.1	21.5	0.1		
October	3.2	8.5	Nil	15th Oct. to 14th Feb.	
November	1.0	12.5	,,		
December	0.2	2.3	,,	0.33	0.46
January	0.2	2.5	,,		
February	0.1	1.3	,,		
March	0.2	1.9	,,	15 Feb. to 14th June	
April	0.4	2.5	,,	Nil	—
May	0.8	3.3	,,		
Total	**25.3**			**0.71**	

12. Not available

13. (a) Characteristics of soils in the commanded area

Sandy to sandy loam 30 percent, silty loam to clay loam 40 percent and clay loam to clay 30 percent

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?

No

14. Existing pattern of cultivation in the area proposed to be irrigated

Perennial			*Kharif*					*Rabi*				
Percentage of principal crops		*Total area (T. acres)*	*Percentage of principal crops*				*Total area (T. acres)*	*Percentage of principal crops*			*Total area (T. acres)*	*Total cropped area (T. acres)*
Cotton	*Others*		*Paddy*	*Bajri*	*Ground-nut*	*Pulses*		*Wheat*	*Jowar*	*Pulses*		
2.0	5.0	0.9	3.0	1.5	5.0	13.5	2.9	4.5	61.0	4.5	9.0	12.8

15. (a) Proposed pattern of irrigated cultivation

Two seasonal		*Kharif*		*Rabi*			
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T. acres)*	*Grand total (T. acres)*
Others		*Jowar*		*Wheat*	*Jowar*		
13.0	1.2	45.0	4.3	3.0	39.0	3.7	9.2

(b) Are there any rules for regulating crop pattern? No

16. Duty and Delta at canal head (as anticipated)

	Duty (acres per mean cusec)		*Delta (feet)*		
	Kharif	*Rabi*	*Kharif*	*Rabi*	*Total*
Two seasonals	100	100	2.4	2.5	4.9
Kharif	210	—	1.1	—	1.1
Rabi	—	190	—	1.3	1.3
Overall delta					1.8

17. (a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

Nil

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

138 wells, irrigating about 2 acres per well, area under well irrigation excluded from the C.C.A.

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. Extent and type of area submerged by reservoir

Entire submergence lies in Maharashtra

Culturable	...	1,510 acres
Waste lands	...	370 acres

24. Total cost of the scheme Rs. 60 lakhs

25. Financial returns of the scheme 1.43 percent

26. Cost per acre irrigated Rs. 648

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture

1. Name of State Maharashtra (formerly in Hyderabad)

2. Scope of the scheme or system

Irrigation scheme; flow-cum-storage; C.C.A. 8,800 acres

3. Source of supply

Harni at Khatgaon/Bori/Bhima/Krishna

4. Description of the reservoir or tank

Live storage	...	0.39 T.M.C.
Dead storage	...	0.05 ,,
Carry-over	...	Nil
Annual reservoir losses	...	0.13 T.M.C.
Filling period	...	15th June to 30th September
Depletion period	...	15th June to 14th February
Catchment area	...	74 square miles
Area submerged	...	1,000 acres
Full reservoir level	...	R.L. 1,670
Minimum pond level	...	R.L. 1,652

5. Description of the headworks

Dam : earthen, 6,100 feet long, 55 feet high

Spillway : masonry, capacity 59,700 cusecs

Head regulators : two vents, 2 feet × 2½ feet, capacity 30 cusecs each

6. Description of the canals

Harni Right Bank Canal (contour); 8 miles long; two-seasonal; unlined; authorised capacity 30 cusecs

Harni Left Bank Canal (contour); 10 miles long; two-seasonal; unlined; authorised capacity 30 cusecs

7. (a) Nature of investigations carried out up-to-date Project sanctioned

(b) Actual or probable date of beginning of construction April 1957

8. Probable date of beginning of operation By end of 1963

IRRIGATION ASPECTS

9. Gross commanded area and culturable commanded area, district-wise

Item	Name of districts				Total
	Osmanabad		Sholapur		
	Right Bank Canal	Left Bank Canal	Right Bank Canal	Left Bank Canal	
	... ...	thousand acres	... ...		... ...
G.C.A.	3.0	3.0	2.8	2.7	11.5
C.C.A.	2.0	2.0	2.5	2.5	9.0
Deduct area under well irrigation					0.2
Net C.C.A.					8.8

10. Area proposed to be irrigated annually and intensity of irrigation

Area proposed to be irrigated		Intensity of irrigation	
Two Seasonal	800 acres	9.1	percent
Kharif	3,500 "	39.8	"
Rabi	3,000 "	34.1	"
Total	**7,300** "	**83.0**	"

11. Normal rainfall and river supply proposed to be diverted

Month	Rainfall			River supply proposed to be diverted	Capacity factor
	Normal	Maximum	Minimum		
2	2	3	4	5	6
	.....inches.....			..... T.M.C.....	
June	4.1	13.5	0.1	15th June to 14th Oct.	
July	5.7	12.6	0.1	0.25	0.40
August	5.5	13.4	Nil		
September	7.5	17.6	0.4		
October	2.5	10.4	Nil		
November	1.0	6.8	,,	15th Oct. to 14th Feb.	
December	0.3	4.1	,,	0.24	0.38
January	0.2	2.3	,,		
February	0.1	1.9	,,	15th Feb. to 14th June	
March	0.2	3.4	,,	Nil	—
April	0.6	3.7	,,		
May	1.1	5.6	,,		
Total	**28.8**			**0.49**	

12. Not available

13.(a) Characteristics of soils in the commanded area

Sandy to sandy loam 30 percent, silty loam to clay loam 40 percent and clay loam to clay 30 percent

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?

No

14. Existing pattern of cultivation in the areas proposed to be irrigated

Two seasonal			*Kharif*							*Rabi*					
Percentage of principal crops		*Total area (T. acres)*	*Percentage of principal crops*						*Total area (T. acres)*	*Percentage of principal crops*				*Total area (T. acres)*	*Total cropped area (T. acres)*
Cotton	*Others*		*Paddy*	*Jowar*	*Bajri*	*Ground-nut*	*Pulses*	*Others*		*Wheat*	*Jowar*	*Pulses*	*Others*		
0.4	3.9	0.4	7.3	2.6	5.7	11.6	15.8	1.7	4.0	4.6	40.8	3.8	1.8	4.6	9.0

15. (a) Proposed pattern of irrigated cultivation

Two seasonal		*Kharif*			*Rabi*			
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T. acres)*	*Grand Total (T. acres)*
Others		*Jowar*	*Paddy*		*Wheat*	*Jowar*		
11.0	0.8	41.0	7.0	3.5	4.0	37.0	3.0	7.3

(b) Are there any rules for regulating crop pattern ? No

16. Duty and Delta at canal head (as anticipated)

	Duty (acres per mean cusec)		*Delta (feet)*		
	Kharif	*Rabi*	*Kharif*	*Rabi*	*Total*
Two seasonal	100	100	2.4	2.5	4.9
Paddy	70	400	3.4	0.6	4.0
Kharif	210	—	1.1	—	1.1
Rabi	—	190	—	1.3	1.3
Overall delta					1.5

17.(a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

Nil

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

82 wells, irrigating about 2 acres per well; area under well irrigation excluded from the C.C.A.

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspect; financial returns

Nil

23. Extent and type of area submerged by reservoir

Entire submergence lies in Maharashtra

Culturable	700 acres
Forest	300 acres

24. Total cost of the scheme Rs. 30 lakhs

25. Financial return of the scheme 1.38 percent

26. Cost per acre irrigated Rs. 418

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture

SHOLAPUR CITY WATER SUPPLY PROJECT 18C. 1-K.5-M. 8

1. **Name of State** Maharashtra (formerly in Bombay)

2. **Scope of the scheme or system**
   Water supply scheme; pumping from river flow; power from Koyna

3. **Source of supply**
   Bhima at Takli/Krishna
   Considerable utilisation upstream

4. to 6. Scheme based on pumping water from flow in Bhima river at Takli

7.(a) **Nature of investigations carried out up-to-date**
   Project report ready

(b) **Actual or probable date of beginning of construction**
   Work started in January, 1961

8. **Probable date of beginning of operation** 1964

9. to 20. Not applicable

21. **Quantum of river supplies available in relation to withdrawals**
   Sufficient supplies are available in the river at the site to meet the requirement of the project

22. **Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns**
   Water supply of 1.6 T.M.C. per year to 6 lakh population at 40 gallons per head per day plus demand for existing industries of 2 million gallons per day.

23. Not applicable

24. **Total cost of the scheme** Rs. 3,03 lakhs (1961)

25. Not available

26.—27. Not applicable

28. **Main features and purpose of the scheme** Water supply to Sholapur town

1. Name of State Mysore (formerly in Bombay)

2. Scope of the scheme or system

Irrigation scheme; flow-cum-storage; Ayacut 10,750 acres

3. Source of supply

Harinala at Tigadi/Malaprabha/Krishna

Utilisation upstream : existing, nil

4. Description of the reservoir or tank

Live storage	...	0.70 T.M.C.
Dead storage	...	0.07 ,,
Carry-over	...	0.08 ,,
Annual reservoir losses	...	0.17 ,,
Filling period	...	June to October
Depletion period	...	June to May
Catchment area	...	39 square miles
Area submerged	...	1,383 acres
Full reservoir level	...	R. L. 2,219
Minimum pond level	...	R. L. 2,196

5. Description of the headworks

Dam	:	earthen, 7,450 feet long, 69 feet high
Spillway	:	600 feet long, capacity 25,000 cusecs
River sluices	:	nil
Head regulators	:	right bank, one vent 5 feet × 7.5 feet, capacity 100 cusecs left bank, one vent 3 feet × 4.5 feet, capacity 25 cusecs

6. Description of the canals

Right Bank Canal (contour); 9.8 miles long; perennial; unlined; authorised capacity 45 cusecs

Left Bank Canal (contour); 6.8 miles long; perennial; unlined; authorised capacity 15 cusecs

7. (a) Nature of investigations carried out up-to-date Project sanctioned in August 1960

(b) Actual date of beginning of construction April 1961

8. Probable date of beginning of operation 1964

IRRIGATION ASPECTS

9. Gross commanded area, culturable commanded area and Ayacut, district-wise

District	Belgaum
G.C.A.	15,000 acres
C.C.A.	12,800 ,,
Ayacut	10,800 ,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation on Ayacut*
Perennial	400 acres	3.7 percent
Kharif	6,000 ,,	55.6 ,,
Rabi	4,000 ,,	37.0 ,,
Hot weather	400 ,,	3.7 ,,
Total	**10,800 ,,**	**100.0 ,,**

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	6	7
	..... *inches*			..... *T.M.C.*	
June	5.0	10.6	Nil	0.04	0.26
July	5.0	15.4	,,	0.06	0.37
August	5.0	10.9	,,	0.06	0.37
September	4.5	9.6	,,	0.06	0.38
October	4.5	11.6	,,	0.10	0.62
November	1.6	5.9	,,	0.07	0.45
December	0.3	0.9	,,	0.07	0.43
January	0.1	2.9	,,	0.07	0.43
February	0.1	0 6	,,	0.04	0.28
March	0.4	0.6	,,	0.02	0.12
April	1.5	5.6	,,	0.02	0.13
May	2.5	5.7	,,	0.02	0.12
Total	**30.5**			**0.63**	

12.—13. Not available

14. Existing pattern of cultivation in the areas proposed to be irrigated

Perennial		*Kharif*				*Rabi*			*Total cropped area (T. acres)*
Percentage of principal crops	*Total area (T.acres)*	*Percentage of principal crops*			*Total area (T.acres)*	*Percentage of principal crops*		*Total area (T. acres)*	
Sugarcane		*Paddy*	*Jowar*	*Others*		*Cotton*	*Wheat*		
2.0	0.2	6.0	31.0	36.0	7.8	20.0	5.0	2.8	10.8

15. (a) Proposed pattern of irrigated cultivation

Perennial		*Kharif*		*Rabi*		*Hot Weather*			*Grand Total (T. acres)*
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T.acres)*	
Sugarcane		*Paddy* / *Jowar*		*Jowar* / *Wheat*		*Light garden*	*Vegetables*		
3.7	0.4	55.6	6.0	37.0	4.0	3.7		0.4	10.8

(b) Are there any rules for regulating crop pattern? Legislation under consideration

16. Duty and Delta at canal head (as anticipated)

Duty (acres per mean cusec)				*Delta (feet)*				
Perennial	*Kharif*	*Rabi*	*Hot weather*	*Perennial*	*Kharif*	*Rabi*	*Hot weather*	*Overall*
67	288	192	144	10.0	0.8	1.3	1.7	1.3

17.(a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

One; Gaddikere tank with an average annual irrigation of 400 acres, not included in the Ayacut

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

120 wells, irrigating a total area of about 200 acres, not included in the Ayacut

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. **Extent and type of area submerged by reservoir**
1,383 acres (garden lands 250 acres, cultivated lands 1,133 acres), all in Mysore

24.	**Total cost of the scheme**	Rs. 83 lakhs (1960)
25.	**Financial return of the scheme**	1.32 percent
26.	**Cost per acre irrigated**	Rs. 772
27.	Not applicable	

28. **Main features and purpose of the scheme**
Conversion of rain-fed cultivation to irrigated agriculture

HATHIKONI PROJECT

12C.1-K.8-My.2

1. **Name of State** Mysore (formerly in Hyderabad)
2. **Scope of the scheme or system**
   Irrigation scheme; flow-cum-storage; Ayacut 5,300 acres
3. **Source of supply**
   Gagarkote stream at Hathikoni/Bhima/Krishna
   Only minor irrigation uses existing upstream; none contemplated
4. **Description of the reservoir or tank**

Live storage	..	0.28 T.M.C.
Dead storage	..	0.07 T.M.C.
Carry-over	..	Nil
Annual reservoir losses	..	0.06 T.M.C.
Filling period	..	June to October
Depletion period	..	June to February
Catchment area	..	51 square miles
Area submerged	..	300 acres
Full reservoir level	..	R. L. 1,363
Minimum pond level	..	R. L. 1,333

5. **Description of the headworks**

Dam	:	earthen, 3,030 feet long, 72.5 feet high
Spillway	:	246 feet long, capacity 13,306 cusecs
River sluices	:	nil
Head regulator	:	left bank, 1 vent, 3 feet × 3 feet

6. **Description of the canal**
   Hathikoni Canal (contour); left bank; 6 miles long; two seasonal; unlined; authorised capacity 65 cusecs
7. **(a) Nature of investigations carried out up-to-date** Project sanctioned

   (b) Actual date of beginning of construction 1959
8. **Probable date of beginning of operation** 1964-65

IRRIGATION ASPECTS

9. **Gross commanded area, culturable commanded area and Ayacut, district-wise**

District	Gulbarga
G.C.A.	7,100 acres
C.C.A.	6,200 ,,
Ayacut	5,300 ,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation on Ayacut*
Kharif	2,200 acres	41.5 percent
Rabi	3,100 „	58.5 „
Total	**5,300 „**	**100.0 „**

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	……*inches*……			……*T.M.C*……	
June	3.8	10.6	Nil	0.02	0.12
July	5.5	13.7	3.0	0.05	0.29
August	4.8	7.6	2.0	0.05	0.29
September	6.8	12.5	1.5	0.04	0.24
October	2.8	8.5	0.7	0.06	0.34
November	1.2	4.6	Nil	0.06	0.36
December	0.2	1.8	„	0.05	0.29
January	0.2	0.2	„	0.05	0.29
February	0.3	0.4	„	0.02	0.13
March	0.3	0.5	„	Nil	—
April	0.8	1.1	„	„	—
May	1.0	5.0	„	„	—
Total	**27.7**			**0.40**	

12. Not available

13. (a) Characteristics of soils in the commanded area

Red loamy and medium black soils

(b) Has any study been made of the likely effect of introduction of irrigation on soil water table ?

No

14. Not available

15. (a) Proposed pattern of irrigated cultivation

Kharif			*Rabi*		*Grand Total (T. acres)*
Percentage of principal crops		*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	
Paddy	*Jowar, Groundnuts etc.*		*Wheat, Jowar etc.*		
13.2	28.3	2.2	58.5	3.1	5.3

(b) Are there any rules for regulating crop pattern ?

Legislation under consideration

16. Duty and Delta at canal head (as anticipated)

Duty (acres per mean cusec)			*Delta (feet)*			
Kharif		*Rabi*	*Kharif*		*Rabi*	*Overall*
Paddy	*Others*		*Paddy*	*Others*		
66	260	170	4.6	0.9	1.4	1.7

17. Not available

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. Extent and type of area submerged by reservoir — 300 acres, all in Mysore

24. Total cost of the scheme — Rs. 58 lakhs (1959)

25. Financial return of the scheme — 1.0 percent

26. Cost per acre irrigated — Rs. 1,091

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture

JAMBADAHALLA PROJECT

13 C.1-K.8-My. 5

1. **Name of State** — Mysore
2. **Scope of the scheme or system**
   Irrigation scheme; flow-cum-storage; Ayacut 6,000 acres
3. **Source of supply**
   Jambadahalla near Duggalapura/Bhadra/Tungabhadra/Krishna
   Utilisation upstream: minor schemes irrigating 663 acres
4. **Description of the reservoir or tank**

Live storage	0.24 T.M.C.
Dead storage	0.10 T.M.C.
Carry-over	Nil
Annual reservoir losses	0.07 T.M.C.
Filling period	May to October
Depletion period	June to May
Catchment area	60 square miles
Area submerged	404 acres
Full reservoir level	R.L. 2,242
Minimum pond level	R.L. 2,229

5. **Description of the headworks**

Dam	:	earthen, 2,897 feet long, 92 feet high
Spillway	:	330 feet long, capacity 12,000 cusecs
Head regulator	:	left bank, 1 vent, 3 feet × 4 feet right bank, 2 vents each 3 feet × 4 feet

6. **Description of the canals**
   Left Bank Channel (contour); 2 miles long; one seasonal; unlined; authorised capacity 13 cusecs
   Right Bank Channel (contour); 5 miles long; perennial; unlined; authorised capacity 35 cusecs
7. (a) **Nature and investigations carried out up-to-date** — Project santioned
   (b) **Actual date of beginning of construction** — 1959
8. **Probable date of beginning of operation** — 1963

IRRIGATION ASPECTS

9. **Gross commanded area, culturable commanded area and Ayacut, district-wise**

District	Chickmagalur
G.C.A.	10,000 acres
C.C.A.	8,000 ,,
Ayacut	6,000 ,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation on Ayacut*
Perennial (Garden)	200 acres	3.3 percent
Kharif (Paddy)	1,000 ,,	16.7 ,,
Kharif (Others)	4,800 ,,	80.0 ,,
Total	**6,000 ,,**	**100.0 ,,**

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	..... *inches*			..... *T.M.C.*	
June	4.0	11.0	1.3	0.10	0.80
July	15.0	18.8	3.8	0.13	1.00
August	4.0	15.6	0.9	0.13	1.00
September	4.0	10.3	0.5	0.12	0.97
October	5.2	13.8	2.2	0.05	0.39
November	2.2	7.7	Nil	0.02	0.16
December	0.5	1.3	,,		
January	0.1	1.3	,,		
February	0.1	2.0	,,	0.02	0.03
March	0.3	1.4	,,		
April	1.8	5.1	,,		
May	2.8	7.4	0.2	Nil	—
Total	**40.0**			**0.57**	

12. Not available

13. (a) **Characteristics of soils in the commanded area**

Sandy loam and black soils, shallow to medium

(b) **Has any study been made of the likely effect of introduction of irrigation on soil characteristics?**

No

14. **Existing pattern of cultivation in the areas proposed to be irrigated**

Perennial		*Kharif*								
Percentage of principal crops	*Total area (T.acres)*	*Percentage of principal crops*							*Total area (T.acres)*	*Total cropped area (T. acres)*
Garden		*Forest*	*Ragi*	*Chillies*	*Pulses*	*Groundnut*	*Paddy*	*Others*		
3.3	0.2	28.8	30.0	8.0	4.8	5.1	16·2	3.8	5.8	6.0

15. (a) **Proposed pattern of irrigated cultivation**

Perennial		*Kharif*			
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*		*Total area (T acres)*	*Grand Total (T. acres)*
Garden		*Paddy*	*Others*		
3.3	0.2	16.7	80.0	5.8	6.0

(b) **Are there any rules for regulating crop pattern?** Legislation under consideration

16. **Duty and Delta at canal head (as anticipated)**

Duty (acres per mean cusec)			*Delta (feet)*			
Perennial	*Kharif*		*Perennial*	*Kharif*		*Overall*
Garden	*Paddy*	*Others*	*Garden*	*Paddy*	*Others*	
170	55	140	3.2	5.5	1.4	2.2

17(a) **Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom**

3 tanks, irrigating an area of 970 acres, not included in the Ayacut

(b) **Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom**

Nil

18. **Quantum of river supplies available in relation to withdrawals**

River supply data not available

19. to 21. Not applicable

GENERAL

22. **Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns**

Nil

23. **Extent and type of area submerged by reservoir**

404 acres, mainly forests

24. **Total cost of the scheme** Rs. 49 lakhs

25. **Financial return of the scheme** 1.37 percent

26. **Cost per acre irrigated** Rs. 817

27. Not applicable

28. **Main features and purpose of the scheme**

Conversion of forest land and rain-fed cultivation to irrigated agriculture

AMBLIGOLA RESERVOIR PROJECT

14 C.1-K.8-My.6

1. **Name of State** Mysore

2. **Scope of the scheme or system**
   Irrigation scheme; flow-cum-storage; Ayacut 7,300 acres (inclusive of an Ayacut of 1,218 acres under Salur Anicut)

3. **Source of supply**
   Salur Halla (Nalla) at Ambligola/Kumudwathi/Tungabhadra/Krishna
   Utilisation upstream :
   existing minor schemes : irrigating 652 acres
   proposed : nil

4. **Description of the reservoir or tank**

Live storage	0.41 T.M.C.
Dead storage	0.03 T.M.C.
Carry-over	Nil
Annual reservoir losses	0.10 T.M.C.
Filling period	May to October
Depletion period	June to November
Catchment area	55 square miles
Area submerged	1,100 acres
Full reservoir level	190 arbitrary datum
Minimum pond level	175 ,, ,,

5. **Description of the headworks**

Dam	:	earthen, 2,240 feet long, 57 feet high
Spillway	:	265 feet long, capacity 9,820 cusecs
Head regulator	:	left flank, 2 vents, each 5 feet × 4 feet
		right flank, 1 pipe, 2 feet diameter

6. **Description of the canals**
   Left Bank Canal (contour) ; 23 miles long ; one seasonal ; unlined ; authorised capacity **182 cusecs**
   Right Bank Canal (contour); 3 miles long ; one seasonal ; unlined ; authorised capacity **11 cusecs**

7.(a) **Nature of investigations carried out up-to-date** Project sanctioned

(b) **Actual or probable date of beginning of construction** May 1954

8. **Probable date of beginning of operation**
   August 1961, but not yet reported as under operation

IRRIGATION ASPECTS

9. Gross commanded area, culturable commanded area and Ayacut, district-wise

District	Shimoga
G.C.A.	11,400 acres
C.C.A.	9,300 ,,
Ayacut	7,300 ,,

Note:—inclusive of area under Salur anicut

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation on Ayacut*
Kharif (Paddy)	7,300 acres	100.0 percent

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....*inches*.....			.....*T.M.C*.....	
June	5.0	14.7	2.8	0.08	0.16
July	14.0	29.0	3.4	0.35	0.68
August	8.0	21.7	3.7	0.27	0.52
September	5.0	8.5	1.6	0.28	0.56
October	5.3	12.0	0.7	0.31	0.60
November	1.6	5.0	Nil	0.04	0.08
December	0.4	2.4	,,	Nil	—
January	0.1	0.7	,,	,,	—
February	0.1	0.5	,,	,,	—
March	0.3	2.4	,,	,,	—
April	1.4	7.2	,,	,,	—
May	2.6	11.6	,,	,,	—
Total	**43.8**			**1.33**	

12. Not available

13.(a) Characteristics of soils in the commanded area

Red sandy loam, shallow to medium in depth, underlain with pale coloured decomposed parent material, with lime kanker here and there, well drained

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics?

No

14. Existing pattern of cultivation in the areas proposed to be irrigated

Perennial		*Kharif*		*Rabi*		
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Total cropped area (T. acres)*
Sugarcane		*Paddy*		*Dry crops*		
2.7	0.2	58.9	4.3	38.4	2.8	7.3

15.(a) Proposed pattern of irrigated cultivation

Kharif	
Percentage of principal crops	*Total area (T. acres)*
Paddy	
100	7.3

(b) Are there any rules for regulating crop pattern ? Legislation under consideration

16. Duty and Delta at canal head (as anticipated)

Duty (acres per mean cusec)	*Delta (feet)*
Paddy	*Paddy*
72	4.2

17.(a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

31 tanks, irrigating a total area of 2,793 acres, included in the Ayacut

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

Nil

18. Quantum of river supplies available in relation to withdrawals

Recorded inflow at Salur Anicut is stated to be as follows:

1955	6.3 T.M.C.
1956	10.5 ,,
1957	7.2 ,,
1958	5.5 ,,

Details of the annual yield have not been furnished

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. Extent and type of area submerged by reservoir

1,100 acres (paddy fields 696 acres, dry land 31 acres, and Government waste and forest 373 acres), all in Mysore

24. Total cost of the scheme Rs. 92 lakhs (December 1959)

25. Financial return of the scheme 0.88 percent

26. Cost per acre irrigated Rs. 1,253

27. Not applicable

28. Main features and purpose of the scheme

Assured supply to paddy, and conversion of dry crops to paddy

DHARMA RESERVOIR PROJECT 15C. 1-K.8-My.

1. **Name of State** Mysore (formerly in Bomby)

2. **Scope of the scheme or system**
   Irrigation scheme; flow-cum-storage; additional Ayacut 3,200 acres

3. **Source of supply**
   Dharma at Yamagalli/Varada/Tungabhadra/Krishna
   Upstream utilisation :
   existing : nil
   comtemplated : nil

4. **Description of the dam and reservoir or tank**

Live storage	0.78 T.M.C.
Dead storage	0.03 T.M.C.
Carry-over	Nil
Annual reservoir losses	0.20 T.M.C.
Filling period	June to September
Depletion period	November to May
Catchment area	38 square miles
Area submerged	1,615 acres
Full reservoir level	R.L. 1,931
Minimum pond level	R.L. 1,908

5. **Description of the headworks**

Dam	:	earthen, 4,300 feet long, 66 feet high
Spillway	:	500 feet long, capacity, 20,000 cusecs
Outlets	:	capacity 400 cusecs

6. **Description of the canals**
   No new canal; water will be let down through the outlets and will be picked up at Shringeri Anicut (about 8 miles down stream) by the Dharma Canal system' **(22A-K.8-My. 4)**

7.(a) **Nature of investigations carried out up-to-date** Project sanctioned
(b) **Actual date of beginning of construction** 1957-58

8. **Probable date of beginning of operation** 1962-63

IRRIGATION ASPECTS

9. **Gross commanded area, culturable commanded area and Ayacut, district-wise**

G.C.A.	14,500 acres
C.C.A.	14,000 ,,
Ayacut	13,200 ,,
Deduct Ayacut under Dharwar Canal	10,000 ,,
Additional Ayacut	3,200 ,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation on Ayacut*
Perennial	1,200 acres	9.1 percent
Kharif	12,000 ,,	90.9 ,,
Rabi	3,500 ,,	26.5 ,,
Total	**16,700** ,,	**126.5** ,,
Deduct existing irrigation under Dharma Canal system	9,800 ,,	
Additional irrigation	**6,900** ,,	

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor (capacity 291 cusecs)*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	.....inches.....			*.....T.M.C.....*	
June	5.8	7.9	2.4	Nil	—
July	10.9	12.6	1.5	0.18	0.23
August	6.5	8.0	3.6	0.21	0.27
September	4.6	6.7	1.2	0.29	0.38
October	4.6	14.8	0.5	0.16	0.21
November	1.7	4.6	Nil	0.07	0.09
December	0.4	1.7	,,	0.07	0.09
January	0.1	0.6	,,	0.07	0.09
February	0.1	0.6	,,	0.09	0.13
March	0.2	3.2	,,	0.09	0.12
April	1.4	3.6	0.3	0.08	0.11
May	2.4	6.6	0.2	0.09	0.12
Total	**38.7**			**1.40**	
Deduct present diversion under Dharma Canal				0.76	
Additional diversion				**0.64**	

12. Not available

13.(a) Characteristics of soils in the commanded area

Red loamy soils generally preponderate. There are patches of medium black soils also.

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?

No

14. Existing pattern of cultivation in the area proposed to be irrigated

Kharif		*Rabi*		
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Total cropped area (T. acres)*
Paddy		*Pulses*		
99.2	13.1	0.8	0.1	13.2

15. (a) Proposed pattern of irrigated cultivation

Perennial		*Kharif*		*Rabi*		
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Percentage of principal crops*	*Total area (T. acres)*	*Grand Total (T. acres)*
Sugarcane		*Paddy*		*Pulses*		
7.2	1.2	71.8	12.0	21.0	3.5	16.7

(b) Are there any rules for regulating crop pattern ?

Legislation under consideration

16. Duty and Delta at canal head (as anticipated)

Duty (acres per mean cusec)			*Delta (feet)*			
Perennial	*Kharif*	*Rabi*	*Perennial*	*Kharif*	*Rabi*	*Overall*
60	62	Nil	11.2	4.8	Nil	1.9

17.(a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

71 small tanks; irrigating about 5,000 acres, included in the Ayacut

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

Nil

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. Extent and type of area submerged by reservoir 1,615 acres, all in Mysore

24. Total cost of the scheme

Rs. 94 lakhs, (revised cost) excluding cost of old Dharma Canal System

25. Financial return of the scheme 4.25 percent

26. Cost per acre irrigated Rs. 573

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture; increase in intensity of cultivation

HAGARI BOMMANAHALLI PROJECT

16C.1-K. 8-My. 8

1. **Name of State** Mysore (formerly in Madras)

2. **Scope of the scheme or system**
   Irrigation scheme; flow-cum-storage; Ayacut 7,350 acres

3. **Source of supply**
   Chick Hagari at Hagari Bommanahalli/Tungabhadra/Krishna
   Irrigation uses upstream
   existing : minor ;
   proposed : nil

4. **Description of the reservoir or tank**

Live Storage	1.75 T.M.C.
Dead Storage	0.20 T.M.C.
Carry-over	0.30 T.M.C.
Annual reservoir losses	0.47 T.M.C.
Filling period	June to October
Depletion period	June to February
Catchment area	906 square miles
Area submerged	3,300 acres
Full reservoir level	R.L. 1,725
Minimum pond level	R.L. 1,709

5. **Description of the headworks**
   Dam : earthen, 5,350 feet long, 50 feet high
   Spillway : 17 gates, 50 feet × 6 feet each, capacity 38,800 cusecs, 4 volute syphones, capacity 12,380 cusecs, total capacity 51,180 cusecs.
   River sluices : nil
   Headregulator : one vent, 4 feet × 4 feet, on either side

6. **Description of the canals**
   Left Bank Canal (contour); 9.5 miles; two seasonal; unlined; authorised capacity 75 cusecs
   Right Bank Canal (contour); 12.8 miles long; two seasonal; unlined; authorised capacity 115 cusecs

7. (a) **Nature of investigations carried out up-to-date** Project sanctioned
   (b) **Actual or probable date of beginning of construction** 1960-61

8. **Probable date of beginning of operation** 1963-64

IRRIGATION ASPECTS

9. Gross commanded area, culturable commanded area and Ayacut, district-wise

District	Bellary
G.C.A.	11,700 acres
C.C.A.	10,000 ,,
Ayacut	7,400 ,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation on Ayacut*
Kharif	7,400 acres	100.0 percent
Rabi	500 ,,	6.8 ,,
Total	**7,900** ,,	**106.8** ,,

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
1	2	3	4	5	6
	..... *inches*			..... *T.M.C.*	
June	3.0	7.5	0.6	0.10	0.20
July	2.0	4.9	0.2	0.40	0.79
August	3.5	11.8	0.7	0.29	0.57
September	4.5	9.0	0.8	0.30	0.61
October	4.0	9.4	0.8	0.33	0.65
November	1.6	6.6	Nil	0.06	0.12
December	0.2	1.8	,,	0.01	0.02
January	0.1	0.6	,,	0.01	0.02
February	0.1	1.9	,,	0.01	0.02
March	0.1	1.3	,,	Nil	—
April	0.8	3.9	,,	,,	—
May	2.3	5.9	,,	,,	—
Total	**22.2**			**1.51**	

12. Not available

13. (a) Characteristics of soils in the commanded area

Brownish red to deep red in colour, shallow to deep, loamy to sandy in texture, intermixed with gravel and pebbles, and having poor water holding capacity and low base status. Black soils also exist in patches.

(b) Has any study been made of the likely effect of the introduction of irrigation on characteristics?

No

14. Existing pattern of cultivation in the areas proposed to be irrigated

Perennial		*Kharif*						
Percentage of principal crops	*Total area (T. acres)*	*Percentage of principal crops*					*Total area (T. acres)*	*Total cropped area (T. acres)*
Sugarcane		*Paddy*	*Mulles*	*Jowar*	*Groundnut*	*Others*		
0.7	0.1	2.7	9.5	32.0	40.0	15 1	7.3	7.4

15(a) Proposed pattern of irrigated cultivation

Kharif		*Rabi*		
Percentage of principal crops	*Total area (T. acres*	*Percentage of principal crops*	*Total area (T. acres)*	*Grand Total (T. acres)*
Paddy		*Others*		
93.7	7 4	6.3	0 5	7.9

(b) Are there any rules for regulating crop pattern ?

Legislation under consideration

16. Duty and Delta at canal head (as anticipated)

Duty (acres per mean cusec)		*Delta (feet)*		
Kharif	*Rabi*	*Kharif*	*Rabi*	*Overall*
62	160	4.8	1.5	4.4

17 (a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

2 tanks, irrigating about 239 acres, not included in the Ayacut

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

70 wells, irrigating nearly 120 acres, not included in the Ayacut

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. Extent and type of area submerged by reservoir

3,300 acres (wet 21, dry cultivation 2,664 and others 648 acres)—all in Mysore

24. Total cost of the scheme Rs. 85 lakhs (1959)

25.	**Financial return of the scheme**	1.22 percent
26.	**Cost per acre irrigated**	Rs. 1,082
27.	Not applicable	
28.	**Main feature and purpose of the scheme**	

Conversion of rain-fed cultivation to irrigated agriculture

KANAKANALA PROJECT

17C.1-K.8-My. 9

1. **Name of State** Mysore (formerly in Hyderabad)
2. **Scope of the scheme or system**
   Irrigation scheme; flow-cum-storage; Ayacut 5,100 acres
3. **Source of supply**
   Kanakanala at Mahapur/Tungabhadra/Krishna
   Irrigation uses upstream ;
   existing: nil
   proposed : nil
4. **Description of the reservoir or tank**

Live storage	0.20 T.M.C.
Dead storage	0.03 ,,
Carry-over	0.04 ,,
Annual reservoir losses	0.05 ,,
Filling period	June to October
Depletion period	June to February
Catchment area	74 square miles
Area submerged	477 acres
Full reservoir level	R.L. 1,606
Minimum pond level	R.L. 1,592

5. **Description of the headworks**

Dam	:	earthen, 2,635 feet long, 50 feet high
Spillway	:	566 feet long, capacity 17,630 cusecs
River sluices	:	nil
Head regulator	:	right bank, one vent, 2 feet × 3 feet

6. **Description of the canal**
   Kanakanala Canal (contour); right bank; 10 miles long; two seasonal; unlined ; authorised capacity 30 cusecs

7. (a) **Nature of investigations carried out up-to-date**	Project sanctioned
(b) **Actual date of beginning of construction**	August 1960
8. **Probable date of beginning of operation**	October 1962

IRRIGATION ASPECTS

9. **Gross commanded area, culturable commanded area and Ayacut, district-wise**

District	Raichur
G.C.A.	8,000 acres
C.C.A.	6,400 ,,
Ayacut	5,100 ,,

10. Area proposed to be irrigated annually and intensity of irrigation

	Area proposed to be irrigated	*Intensity of irrigation on Ayacut*
Two seasonal	200 acres	3.9 percent
Kharif	2,500 ,,	49.0 ,,
Rabi	2,400 ,,	47.1 ,,
Total	**5,100** ,,	**100.0** ,,

11. Normal rainfall and river supply proposed to be diverted

Month	*Rainfall*			*River supply proposed to be diverted*	*Capacity factor*
	Normal	*Maximum*	*Minimum*		
	.....*inches*.....			.....*T.M.C*.....	
June	3.0	3.6	Nil	0.02	0.26
July	2.5	7.5	,,	0.04	0.50
August	3.5	11.5	,,	0.04	0.50
September	5.5	12.6	,,	0.06	0.77
October	3.3	9.0	,,	0.06	0.75
November	1.4	5.6	,,	0.04	0.51
December	0.2	0.8	,,	0.04	0.50
January	0.1	0.7	,,	0.01	0.12
February	0.2	1.4	,,	0.01	0.14
March	0.2	3.2	,,	Nil	—
April	0.5	4.6	,,	,,	—
May	1.8	5.7	,,	,,	—
Total	**22.2**			**0.32**	

12. Not available

13. (a) Characteristics of soils in the commanded area

Red loamy and medium black soils, distributed fairly in equal proportions

(b) Has any study been made of the likely effect of the introduction of irrigation on soil characteristics ?

No

14. Existing pattern of cultivation in the areas proposed to be irrigated

Kharif			*Rabi*				*Total cropped area (T. acres)*
Percentage of principal crops		*Total area (T. acres)*	*Percentage of principal crops*			*Total area (T. acres)*	
Jowar	*Others*		*Jowar*	*Catton*	*Wheat*		
20.0	9.0	1.5	20.0	49.0	2.0	3.6	5.1

15. (a) Proposed pattern of irrigated cultivation

Two seasonal		*Kharif*			*Rabi*			
Percentage of principal crops	*Total area*	*Percentage of principal crops*		*Total area*	*Percentage of principal crops*		*Total area*	*Grand Total (T. acres)*
Light garden and Vegetable	*(T. acres)*	*Paddy*	*Jowar*	*(T. acres)*	*Cotton*	*Jowar*	*(T. acres)*	
5.0	0.2	5.0	43.0	2.5	27.4	19.6	2.4	5.1

(b) Are there any rules for regulating crop pattern ?

Legislation under consideration

16. Duty and Delta at canal head (as anticipated)

Duty (acres per mean cusec)				*Delta (feet)*				
Two Seasonal	*Kharif*		*Rabi*	*Two Seasonal*	*Kharif*		*Rabi*	*Overall*
	Paddy	*Jowar*			*Paddy*	*Jowar*		
136	62	264	175	3.5	4.8	0.9	1.3	1.4

17. (a) Number of tanks in operation in the area proposed to be irrigated and the area irrigated therefrom

Nil

(b) Number of wells in operation in the area proposed to be irrigated and the area irrigated therefrom

Nil

18. Quantum of river supplies available in relation to withdrawals

River supply data not available

19. to 21. Not applicable

GENERAL

22. Aspects other than irrigation and power; water supply (month-wise), if any, required for these aspects; financial returns

Nil

23. Extent and type of area submerged by reservoir 477 acres, all in Mysore

24. Total cost of the scheme Rs. 45 lakhs (1960)

25. Financial return of the scheme 1.21 percent

26. Cost per acre irrigated Rs. 882

27. Not applicable

28. Main features and purpose of the scheme

Conversion of rain-fed cultivation to irrigated agriculture

TABLE I

Abstract of major and medium schemes

Index number	*Name of scheme or project*	*Power installed (k.W.)*	*C C.A. or Ayacut (acres)*	*Proposed annual irrigation (acres)*	*Proposed annual diversion (T.M.C.)*
1	2	3	4	5	6
	ANDHRA PRADESH		*Ayacut*		
1C. 1-K.7-A.1	Nagarjunasagar Project†	—	2,000,000	2,000,000	263.6
2C.1-K. 8-A.2/My.2	Tungabhadra Project—High Level Canal				
	Stage I* (Jointly with Mysore)	—	189,400	189,400	28.8
3C.1-K. 8-A.3/My.3	Tungabhadra Hydro-electric Project				
	Stage II (Jointly with Mysore)	27,000	—	—	*74.9**/43.0****
	Total	**27,000**	**2,189,400**	**2,189,400**	**292.4** *74.9**/43.0****

†The Right Bank Canal will be excavated upto mile 135 *to carry a discharge of* 11,000 *cusecs Masonry works are to be designed for ultimate discharge of* 21,000 *cusecs. The Left Bank Canal will be excavated upto mile* 108, *and will carry a discharge of* 11,000 *cusecs, making provision for future requirements, as envisaged in the October,* 1956 *estimates.*

The October, 1956 *estimates provide for the construction of the head reach tunnel to a discharge of* 15,000 *cusecs.*

**Vide Planning Commission letter No. NR-2(7)/59, dated the* 24*th August,* 1959, *Stage II of the Project is also considered technically acceptable and it is stated that "it is the intention that Stage II should be taken up on completion of the first stage and sanction will be conveyed at the appropriate time."*

***As proposed by Andhra Pradesh.*

****As proposed by Mysore.*

Note :—Figures in italics in column 6 *represent diversion for power generation only*

TABLE I—*continued*

Abstract of major and medium schemes

Index number	*Name of the scheme or project*	*Power installed (k.W.)*	*C.C.A. or Ayacut (acres)*	*Proposed annual irrigation (acres)*	*Proposed anuual diversion (T.M.C.)*
1	2	3	4	5	6
	MAHARASHTRA		*C.C.A.*		
4C. 1-K. 1-M.1	Koyna Hydro-electric Project (Stages I and II)	580,000	—	—	67.5 *39.6*
5C. 1-K. 5-M.2	Khadakwasla Project—Stage I (Remodelling and Extension of Mutha Canals **13A-K. 5-M.6)**	—	65,200	77,000	17.5
6C. 1-K. 5-M.3	Vir Dam Project	—	—	101,000	14.4
7C. 1-K. 5-M.4	Kada Project	—	7,400	7,000	0.4
8C. 1-K. 5-M.5	Mehekari Project	—	16,400	10,000	0.6
9C. 1-K. 5-M.6	Chandni Project	—	12,500	9,200	0.7
10C. 1-K. 6-M.7	Harni Project	—	8,800	7,300	0.5
	Total	**580,000**	**110,300**	**211,500**	**101.6** *39.6*
	MYSORE		*Ayacut*		
11C. 1-K. 4 My.1	Harinala Project	—	10,800	10,800	0.6
12C. 1-K. 8-My.2	Hathikoni Project	—	5,300	5,300	0.4
2C.1-K.8-A.2/My.3	Tungabhadra High Level Canal -Stage I* (Jointly with Andhra Pradesh)	—	—	—	—
3C. 1-K.8-A.3/My.4	Tungabhadra Hydro-electric Project Stage II (Jointly with Andhra Pradesh)	—	—	—	—
13C.1-K. 8-My. 5	Jambadahalla Project	—	6,000	6,000	0.6
14C.1-K. 8-My 6	Ambligola Reservoir Project (in operation since 1961)	—	7,300	7,300	1.3
15C.1-K. 8-My. 7	Dharma Reservoir Project	—	3.200	6,900	0.6
16C.1-K. 8-My. 8	Hagari Bommanahalli Project	—	7,400	7,900	1.5
17C.1-K. 8-My. 9	Kanakanala Project	—	5,100	5,100	0.3
	Total	**—**	**45,100**	**49,300**	**5.3**
	Grand Total	**607,000**	**2,344,800**	**2,450,200**	**399.3** *114.5**/82.6****
	Water supply schemes				
18C.1-K.5-M.8	Sholapur city water supply Project	—	—	—	1.6

**See foot note on Page 83*

***As proposed by Andhra Pradesh*

****As proposed by Mysore*

Note : Figures in italics in column 6 represent diversion for power generation only

TABLE II

Particulars of minor schemes

Serial number	*Name of scheme*	*Name of sub-basin*	*Capacity of tanks (M. Cft.)*	*Capacity of diversion schemes (cusecs)*	*C.C.A. or Ayacut (acres)*	*Area proposed to be irrigated (acres)*
1	2	3	4	5	6	7
	ANDHRA PRADESH				*Ayacut*	
	Guntur district					
1	Sirigiripadu tank	K.7 Lower Krishna	N.A.	—	1,055	1,055
	Hyderabad district					
1	Jutpally project	K.6 Lower Bhima	247	—	2,450	2,450
2	Lakhnapur Project	,,	283	—	2,600	2,600
		Total	**530**		**5,050**	**5,050**
	Total for Andhra Pradesh				**6,105**	**6,105**
	MAHARASHTRA				*C.C.A.*	
	Ahmednagar district					
1	Percolation tank at Mohari	K.5 Upper Bhima	85	—	1,514	1,280
2	Bandhara at Watephal	,,	—	5	510	410
3	Bandhara at Waki	,,	—	14	725	668
		Total			**2,749**	**2,358**
	Kolhapur district					
1	Weir at Waghapur (lift)	K.1 Upper Krishna	—	N.A.	900	687
2	Weir at Nilaphan (lift)	,,	—	,,	1,100	857
3	Weir at Gijwane (lift)	K.3 Ghataprabha	—	,,	1,200	900
4	Weir at Nirli (lift)	,,	—	,,	1,900	1,500
5	Weir at Ainapur (lift)	,,	—		1,200	900
		Total			**6,300**	**4,844**

TABLE II—(*continued*)

Particulars of minor schemes

Serial number	*Name of scheme*	*Name of sub-basin*	*Capacity of tanks (M. Cft.*	*Capacity of diversion schemes (cusecs)*	*C.C.A. or Ayacut (acres)*	*Area proposed to be irrigated (acres)*
1	2	3	4	5	6	7
					C.C.A.	
	Osmanabad district					
1	Sonari tank	K.5 Upper Bhima	53	—	1,300	90
2	Dongri tank	,,	6	—	575	1,140
		Total			**1,815**	**1,230**
	Poona district					
1	Victoria tank at Warwand	K.5 Upper Bhima	159	—	3,240	3,240
2	Tank at Alegaon	,,	61	—	1,225	1,225
3	Bandhara at Ambodi	,,	—	8	700	700
4	Bandhara at Ambavane	,,	—	15	516	516
5	Bandhara at Ranje	,,	—	10	520	520
		Total			**6,201**	**6,201**
	Sangli district					
1	Kudali tank	K.2 Middle Krishna	57	—	1,070	1,050
	Satara district					
1	Tambve tank	K.5 Upper Bhima	164	36	3,200	2,500
2	Bandhara at Shete	K.1 Upper Krishna	—	35	1,869	1,869
3	Bandhara at Nandgaon	,,	—	14	1,000	1,000
4	Charegaon Bandhara	,,	—	32	1,900	1,900
5	Bandhara near Dhavane	,,	—	36	2,700	2,700
6	Irrigation tank at Andholi	K.5 Upper Bhima	250	—	4,000	3,690
7	Bandhara at Rajapur	K.1 Upper Krishna	—	60	8,760	4,800
		Total			**23,429**	**18,459**
		Total for Maharashtra			**41,564**	**34,142**

TABLE II—(*contiuued*)

Particulars of minor schemes

Serial number	*Name of scheme*	*Name of sub-basin*	*Capacity of tanks (M. Cft.)*	*Capacity of diversion schemes (cusecs)*	*C.C.A. or Ayacut (acres)*	*Area proposed to be irrigated (acres)*
1	2	3	4	5	6	7
	MYSORE				*Ayacut*	
	Belgaum district					
1	Tank at Haljunjawad	K.4 Malaprabha	12	—	565	560
2	Tank at Kadatan Bagewadi	,,	32	—	1,200	1,200
3	Tank at Nandagod	,,	20	—	873	873
4	Tank at Sidda Samudra	,,	66	—	1,250	1,250
5	Tank at Hirekop	,,	31	—	865	865
6	Bandhara at Chinehwadi and Kekkeri	,,	—	16	500	500
7	Bandhara across Veerbhadranala (near Shidnal)	,,	—	5	520	522
8	Sanikop Bandhara	,,	—	14	600	600
9	Haliyal Park tank	K.2 Middle Krishna	56	—	1,305	1,305
10	Tank at Aigoli	,,	44	—	630	630
11	Agrani Bandhara (Kalloli)	,,	—	40	3,100	3,860
12	Bandhara at Lakhanpur	,,	—	69	4,292	2,612
		Total			**15,700**	**14,777**
	Bijapur district					
1	Tadavalga tank	K.6 Lower Bhima	65	—	700	700
2	Todalbagi tank	K.2 Middle Krishna	70	—	772	660
3	Bableswar tank	K.6 Lower Bhima	67	—	725	600
4	Jeerankelige Bhandara	,,	—	N.A.	700	700
5	Loni tank	,,	66	—	712	650
6	Sangoli tank	,,	231	—	1,280	1,280
7	Hanjogi tank	,,	50	—	750	750
8	Hokarani tank	,,	43	—	540	540
		Total			**6,179**	**5,880**

TABLE II—(*continued*)

Particulars of minor schemes

Serial number	*Name of scheme*	*Name of sub-basin*	*Capacity of tanks (M.Cft.)*	*Capacity of diversion schemes (cusecs)*	*C.C.A. or Ayacut (acres)*	*Area proposed to be irrigated (acres)*
1	2	3	4	5	6	7
					Ayacut	
Chikmagalur district						
1	Constructing Pura anicut near Kodihalli	K. 9. Vedavathi	—	25	600	600
Dharwar district						
1	Improvements to tank at Neeralagi	K. 4. Malaprabha	28	—	792	792
2	Tank at Neglur	K. 8. Tungabhadra	32	—	725	725
3	Tank at Sunkal Bidri	,,	28	—	650	650
4	Extension of Hiriyur Canal Part III	,,	—	N.A.	580	580
5	Improvements to tank at Hoswal	K. 4. Malaprabha	16	—	616	616
6	Tank at Narendra	,,	34	—	973	973
7	Tank at Bambaragundi	,,	36	—	600	600
8	Irrigation tank at Sirur	,,	68	—	1,000	1,000
	Total				**5,936**	**5,936**
Hassan district						
1	Pick-up across waste weir halla of Harnahalli Hobli near Vitlapura	K. 9 Vedavathi	—	25	500	500
Shimoga district						
1	Mavinahole tank	K. 8 Tungabhadra	71	—	800	800
	Total for Mysore				**29,715**	**28,493**

TABLE III

Particulars of small tanks and diversions

Serial number	*Name of district*	*Name of sub-basin*	*Number of tanks and diversions*	*C.C.A. or Ayacut (acres)*	*Area proposed to be irrigated (acres)*
1	2	3	4	5	6
	ANDHRA PRADESH			*Ayacut*	
1.	Krishna	76% in K. 12 Muneru; 17% in K. 7 Lower Krishna 7% in K. 11 Paleru	4	1,217	(1,217)
	MAHARASHTRA			*C.C.A.*	
1.	Ahmednagar	K. 5 Upper Bhima	1	155	125
2.	Osmanabad	54% in K. 5 Upper Bhima 46% in K. 6 Lower Bhima	3	1,300	730
3.	Poona	K. 5 Upper Bhima	6	3,000	1,745
4.	Satara	70% in K. 1 Upper Rrishna 30% in K. 5 Upper Bhima	22	3,481	3,481
	Total		**32**	**7,936**	**6,081**
	MYSORE			*Ayacut*	
1.	Belgaum	36% in K. 3 Ghataprabha 34% in K. 4 Malaprabha 30% in K. 2 Middle Krishna	38	6,894	6,894
2.	Bijapur	43% in K. 2 Middle Krishna 31% in K. 6 Lower Bhima 16% in K. 3 Ghataprabha 10% in K. 4 Malaprabha	29	6,327	6,327
3.	Chickmagalur	69% in K. 8 Tungabhadra 31% in K. 9 Vedavathi	4	1,028	1,028
4.	Chitradurga	73% in K. 9 Vedavathi 27% in K. 8 Tungabhadra	10	1,241	1,241
5.	Dharwar	57% in K. 8 Tungabhadra 43% in K. 4 Malaprabha	23	4,691	4,691
6.	Hassan	K. 9 Vedavathi	3	300	300
7.	Shimoga	K. 8 Tungabhadra	4	800	800
8.	Tumkur	K. 9 Vedavathi	9	1,165	1,165
	Total		**120**	**22,446**	**22,446**

The percentages in column 3 denote part of the district which lies in the sub-basin

TABLE

Abstract of minor schemes and

State / District	Minor schemes as per Table II			Small tanks and diversions	
	Number	C.C.A. or Ayacut	Proposed annual irrigation	Number	C.C.A. or Ayacut
1	2	3	4	5	6
		.....acres.....			.....acres.....
ANDHRA PRADESH		*Ayacut*			*Ayacut*
Guntur	1	1,055	1,055	—	—
Hyderabad	2	5,050	5,050	—	—
Krishna	—	—	—	4	1,217
Total	**3**	**6,105**	**6,105**	**4**	**1,217**

(*Figures in brackets are assumed figures*)

Notes :—

1. *The proposed annual irrigation by small tanks and diversions has been assumed*
2. *The duty (acres per M. Cft.) is based on table V and the assumption that The same figure has been assumed for Krishna and Guntur districts also.*

MAHARASHTRA		*C.C.A.*			*C.C.A.*
Ahmednagar	3	2,749	2,358	1	155
Kolhapur	5	6,300	4,844	—	—
Osmanabad	2	1,815	1,230	3	1,300
Poona	5	6,201	6,201	6	3,000
Sangli	1	1,070	1,050	—	—
Satara	7	23,429	18,459	22	3,481
Total	**23**	**41,564**	**34,142**	**32**	**7,936**
MYSORE		*Ayacut*		*Ayacut*	
Belgaum	12	15,700	14,777	38	6,894
Bijapur	8	6,179	5,880	29	6,327
Chickmagalur	1	600	600	4	1,028
Chitradurga	—	—	—	10	1,241
Dharwar	8	5,936	5,936	23	4,691
Hassan	1	500	500	3	300
Shimoga	1	800	800	4	800
Tumkur	—	—	—	9	1,165
Total	**31**	**29,715**	**28,493**	**120**	**22,446**
Grand Total	**57**	**77,384**	**68,740**	**156**	**31,599**

IV

small tanks and diversions

as per Table III *Proposed annual irrigation*	*Total* *C.C.A. or Ayacut*	*Total* *Proposed annual irrigation*	*Duty (acres per M.Cft.)*	*Proposed annual diversion*	*State* *District*
7	8	9	10	11	12
....acres....	*.....acres.....*			*T.M.C.*	
	Ayacut				**ANDHRA PRADESH**
—	1,055	1,055	6	0.18	Guntur
—	5,050	5,050	6	0.84	Hyderabad
1,217	(1,217)	(1,217)	6	0.20	Krishna
1,217	**7,322**	**7,322**		**1.22**	**Total**

to be the same as the Ayacut.

irrigation in Telengana is 80 percent Abi and 20 percent Tabi.

	C.C.A.				**MAHARASHTRA**
125	2,904	2,483	17.5	0.14	Ahmednagar
—	6,300	4,844	15	0.32	Kolhapur
730	3,115	1,960	25	0.08	Osmanabad
1,745	9,241	7,946	15	0.53	Poona
—	1,070	1,050	16.25	0.06	Sangli
3,481	26,910	21,940	15	1.46	Satara
6,081	**49,500**	**40,223**		**2.59**	
	Ayacut				**Mysore**
6,894	22,594	21,671	10	2.17	Belgaum
6,327	12,506	12,207	12	1.02	Bijapur
1,028	1,628	1,628	8	0.20	Chickmagalur
1,241	1,241	1,241	4	0.31	Chitradurga
4,691	10,627	10,627	7	1.52	Dharwar
300	800	800	5	0.16	Hassan
800	1,600	1,600	7	0.23	Shimoga
1,165	1,165	1,165	5	0.23	Tumkur
22,446	**52,161**	**50,939**		**5.84**	**Total**
29,744	**108,983**	**98,484**		**9.65**	**Grand Tota**

TABLE V

Crop pattern and duty, district-wise

Serial number	*State/District*	*Average annual rainfall (inches)*	*Proposed crop pattern*	*Proposed Duty (acres per M. Cft.)*
1	2	3	4	5
ANDHRA PRADESH				
1.	Guntur	32.5	*Abi*	5
2.	Hyderabad	27.6	*Abi* and *Tabi*	6.67 for *Abi*; 3.33 for *Tabi*
3.	Krishna	37.4	*Abi*	5
MAHARASHTRA				
1.	Ahmednagar	25.6	*Kharif* 50% *Rabi* 50%	17.5
2.	Kolhapur	78.7	*Rabi* 100%	15
3.	Osmanabad	33.5	*Kharif* 50% *Rabi* 50%	25
4.	Poona	51.2	*Rabi* 100%	15
5.	Sangli (South Satara)	29.5	*Rabi* 100%	16.25
6.	Satara	49.2	*Rabi* 100%	15
MYSORE				
1.	Belgaum	39.4	Mixed crops paddy and sugar cane in west zone and dry crops in east zone	10
2.	Bijapur	23.6	Dry crops like jowar, wheat and cotton	12
3.	Chikmagalur	88.6	Paddy and sugar cane	8
4.	Chitradurga	21.7	,,	4
5.	Dharwar	27.6	Mixed crops	7
6.	Hassan	39.4	Paddy	5
7.	Shimoga	78.7	Paddy and sugarcane	7
8.	Tumkur	27.6	Paddy	5